ECO ROUTE
ENVIRONMENTAL CONSULTANCY

ENVIRONMENTAL MANAGEMENT PROGRAMME

PROPOSED RESIDENTIAL DEVELOPMENT AND ASSOCIATED INFRASTRUCTURE ON A PORTION OF ERF 1180, KEURBOOMSTRAND, PLETTENBERG BAY

November 2025 – Amended June 2026

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Appendix 4 of Regulation 982 of the 2014 EIA Regulations contains the required contents of an Environmental Management Programme (EMPr). The checklist below serves as a summary of these requirements:

(a) Details of (i) the EAP who prepared the EMPr; and (ii) The expertise of that 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 10 years' experience as an Environmental Assessment Practitioner, of which she has spent 9 years at Eco Route. Samantha is currently based at Eco Route's Durban office. Please see attached CV of the EAP.
(b) A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.	This EMPr covers all aspects involved in the Proposed Residential Development and Associated Infrastructure on a Portion of Erf 1180, Keurboomstrand, Plettenberg Bay Section 2 provides specific project details.
(c) A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers	Section 2 provides GIS mapping which superimpose the proposed activity onto environmentally sensitive areas.
(d) A description of the impact management objectives, 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 the 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 and 9.
(e) A description and identification of impact management outcomes required for the aspects contemplated above.	Addressed throughout the EMPr, specifically in Sections 3 and 9.
(f) A description of the proposed impact management actions, identifying the manner in	Addressed throughout the EMPr, specifically in Sections 4 and 9.

which the impact management objectives and outcomes contemplated above will be achieved and must, where applicable include actions to – (i) Avoid, modify, remedy control or stop any action, activity or process which causes pollution or environmental degradation; (ii) Comply with any prescribed environmental management standards or practises; (iii) Comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable.	
(g) The method of monitoring the implantation of the impact management actions contemplated above.	Section 6.
(h) The frequency of monitoring the implementation of the impact management actions contemplated above.	Section 6.
(i) An indication of the persons who will be responsible for the implementation of the impact management actions.	Sections 6, 8, 9 and 13.
(j) The time periods within which the impact management actions must be implemented.	Section 9.
(k) The mechanism for monitoring compliance with the impact management actions.	Sections 5 and 6.
(l) A program for reporting on compliance, taking into account the requirements as prescribed in the Regulations.	Section 6.
(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	Sections 8 and 9.
(n) Any specific information that may be required by the competent authority.	All required information has been addressed within this EMPr and annexures.

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".

National Environmental Management Act, (Act 107 of 1998)

(i) 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 Environmental Management Programme/EMPr must be read in conjunction with the Basic Assessment Report dated August 2022 and all specialist reports/inputs. 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, rehabilitation, operational and maintenance 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.

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 all phases of this project.

2. PROJECT DETAILS

The site is located in Keurboomstrand, a resort town near Plettenberg Bay in the Western Cape, under the jurisdiction of the Bitou Municipality.

The subject site is undeveloped, containing no existing buildings, services or infrastructure (with one exception being some decommissioned water pipelines and associated infrastructure). It is offset from the nearest road (Main Street) by the 27m width of the adjoining public place (Erf 391), which shares its northern boundary. Its southern boundary is delineated by the 25m wide road servitude set out for Main Road 394, which is the main access and entrance road for the whole of the Keurboomstrand town.

The proposal is to develop 2x group dwelling units on the eastern portion (referred to as "Erf 1180", previously Erf 155) of Erf 1236. Approximately 2000m² of the 5 000m² subject site is earmarked for development.

The preferred development proposal entails the construction of two (2) double-storey residential units with double garage and a shared swimming pool.

Town Planning: the proposal is to subdivide a portion (±5000m²) off from Erf 1180, and to rezone this portion from "Open Space Zone 2" to "Open Space Zone 3" for "Nature conservation area" to allow for the two dwelling units and a swimming pool.

Access: the property is entitled to a 7m wide right of way servitude across Erf 391. The proposed driveway width into the development is 4m, curved around mature trees of conservation value.

A 35m scenic route setback was put in place by the visual impact specialist for all alternatives. This is to provide a reduced visual intrusion along a scenic route into and out of Keurboomstrand and the town of Plettenberg Bay. The units will incorporate low-pitched roofing and earth-toned colours. In addition, botanical sensitive areas have been marked as no-go areas and provided an additional 5m buffer offset from the proposed development.

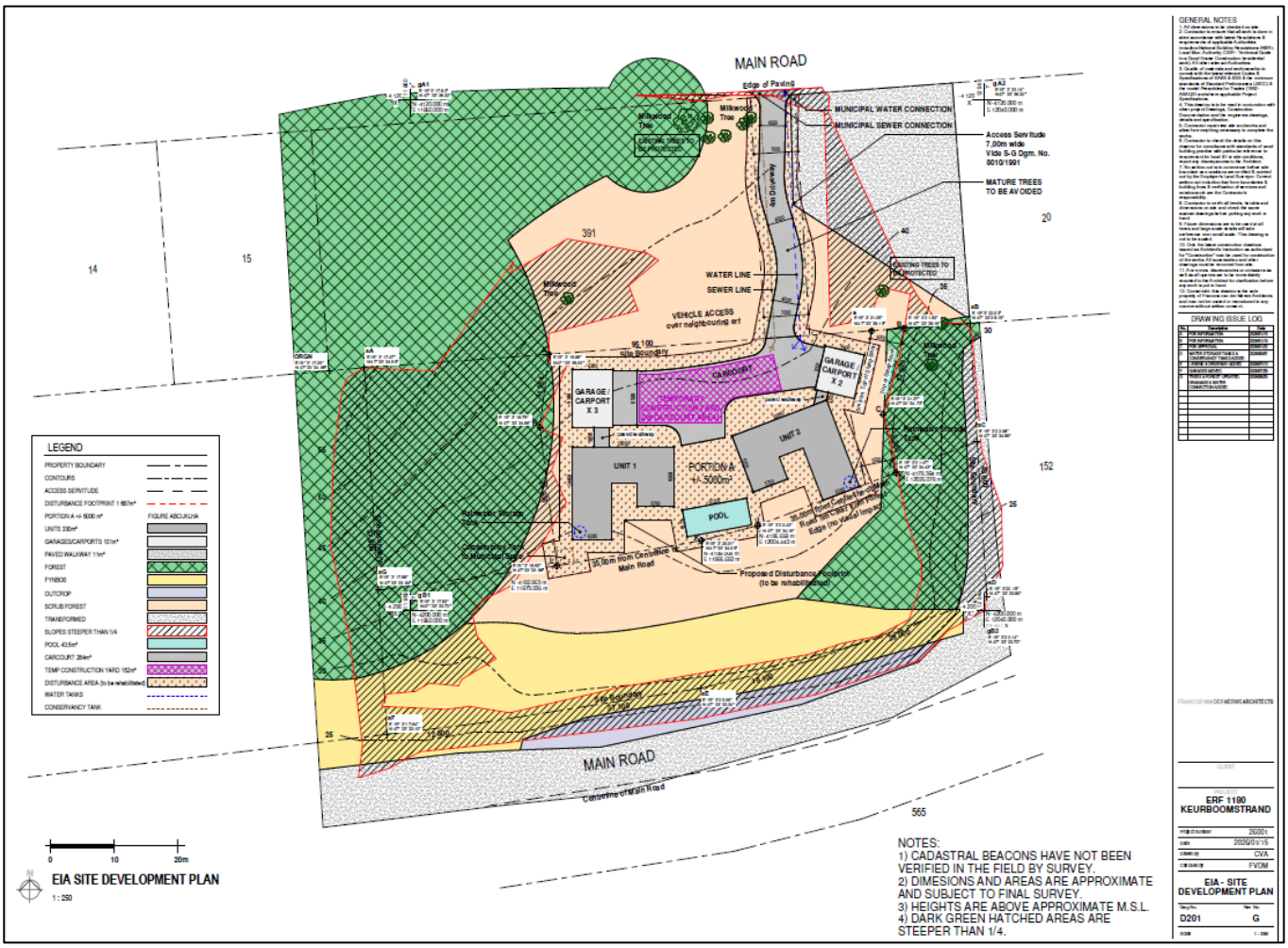


Figure 1: Preferred SDP

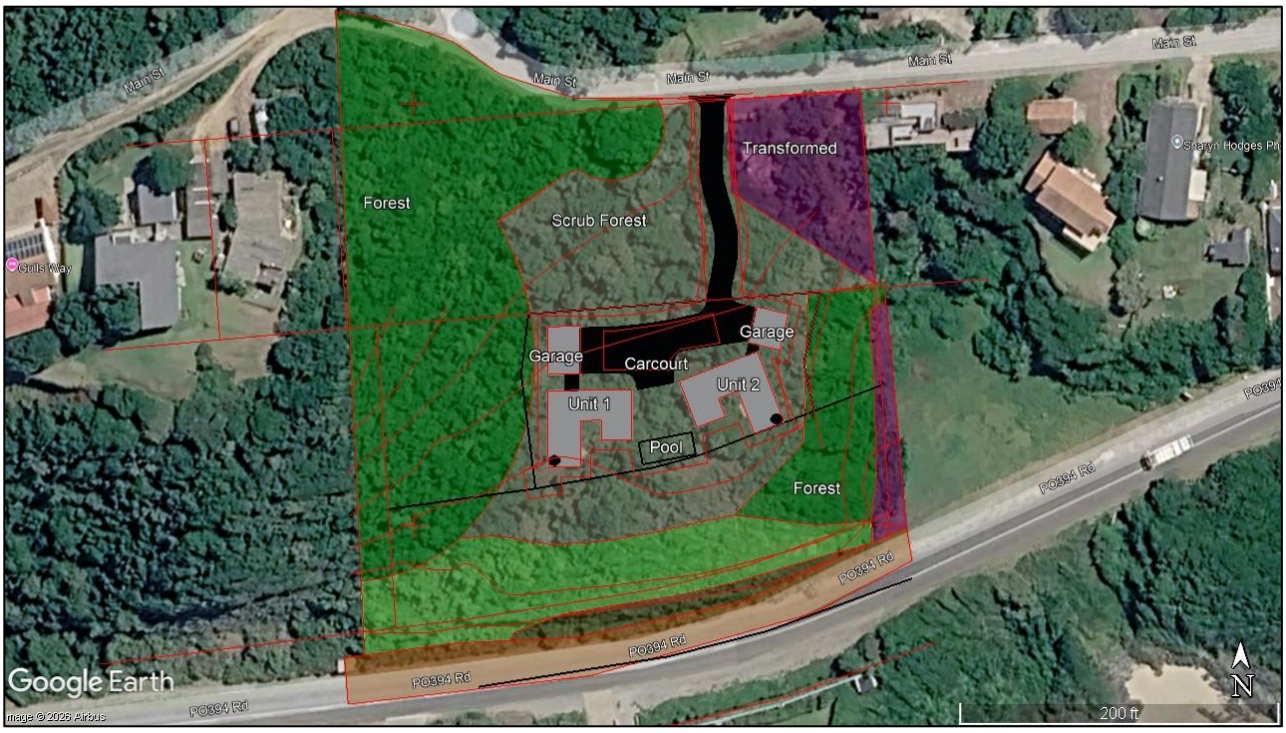


Figure 2: Google Earth Overlay of the Preferred Layout including buffers and no-go vegetation

Water Supply

One municipal water connection will be provided by Bitou Municipality.

An alternative method of water supply would be the harvesting of rainwater. However, rainwater should be considered as a supplementary supply for non-potable use (watering of garden), unless treated.

Sewerage

A conservancy tank will be located on the south-west corner of the development. Sewage removal will be undertaken by a private contractor to the Gansevallei WWTW. However, once internal reticulation/bulk upgrades have been completed, the development must connect to such services.

Electricity

The electricity supplier is Bitou Municipality. The municipality can provide one electrical connection. The split of the consumption of the two houses will need to be undertaken internally.

Solid Waste Management

The development will be incorporated into the Bitou Municipal solid waste stream. Regular waste collection at the proposed site is of utmost importance to prevent the degradation of the overall environment; as well as to prevent scavenging by fauna and indigent communities. Recycling of waste will be implemented for the lifespan of the proposed project.

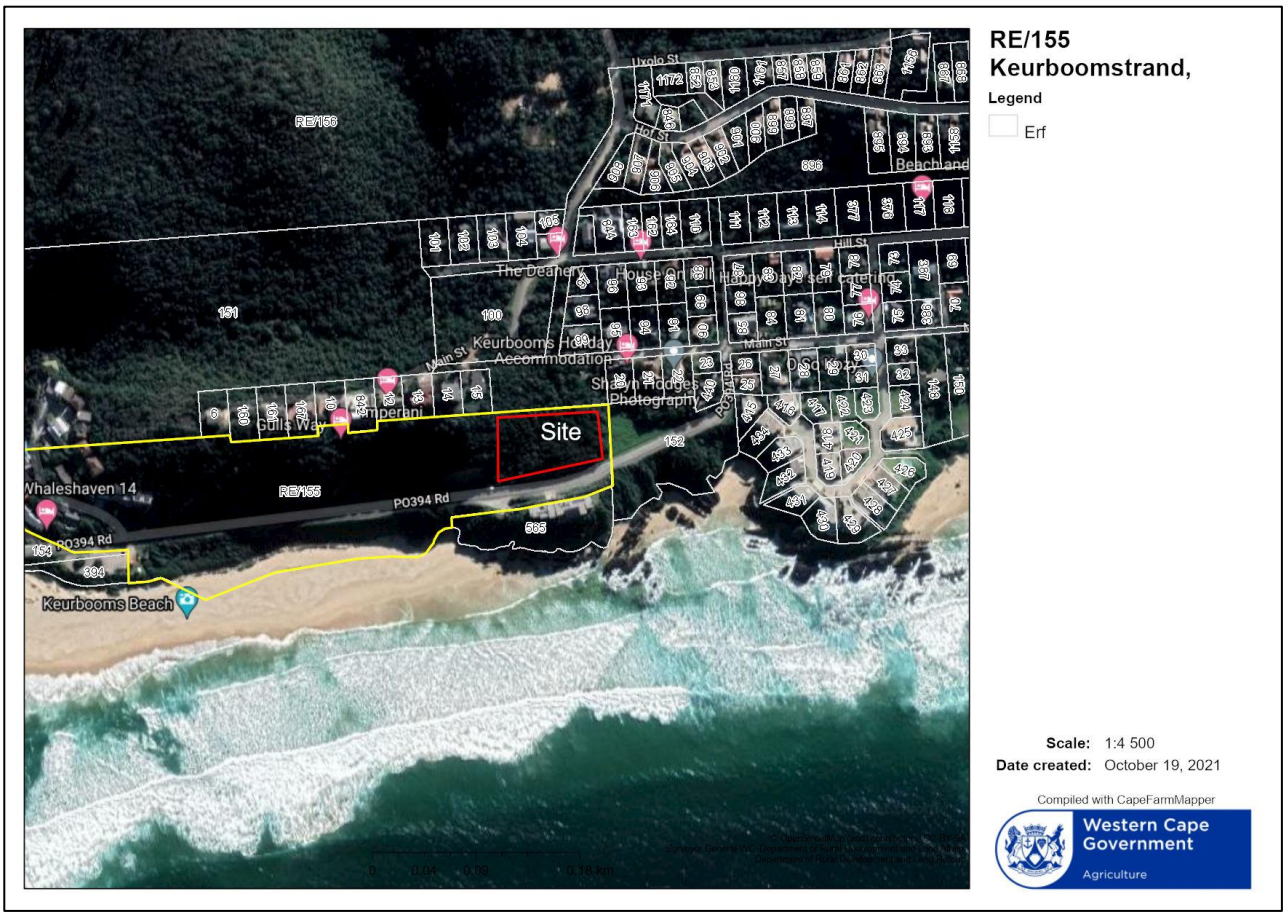


Figure 3: Location Map of the proposed development

Figure 4: Biodiversity Sector Plan

3. IMPACTS ASSOCIATED WITH THE PLANNING, CONSTRUCTION AND OPERATION OF THE ACTIVITY

Alternative: **PREFERRED ALTERNATIVE**	
PLANNING, DESIGN AND DEVELOPMENT PHASE	
Potential impact and risk:	
Nature of impact:	**Impact on biodiversity (flora and fauna)**
Extent and duration of impact:	**Local, short-term**
Consequence of impact or risk:	**Negative**
Probability of occurrence:	**High**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**Low**
Indirect impacts:	**Negligible, loss of 0.0003 percent of vegetation unit that is already well protected and exceeds conservation target of 19 %.**
Cumulative impact prior to mitigation:	**Low**
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:	**Medium**
Proposed mitigation:	**Most sensitive areas are excluded from development footprint. Dwelling should not extend into the fynbos on the south, the dune forest-thicket on the north-west and a band of dune thicket-forest along the slope on the eastern boundary.**
Residual impacts:	**Negligible**
Cumulative impact post mitigation:	**Negligible, loss of 0.0003 percent of vegetation unit that is already well protected and exceeds conservation target of 19 %.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Alternative: PREFERRED ALTERNATIVE	
CONSTRUCTION PHASE	
Potential impact and risk:	
Nature of impact:	**Impact on biodiversity (flora and fauna)**
Extent and duration of impact:	**Local, short-term**
Consequence of impact or risk:	**Negative**
Probability of occurrence:	**High**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**Low**
Indirect impacts:	**Negligible, loss of 0.0003 percent of vegetation unit that is already well protected and exceeds conservation target of 19 %.**
Cumulative impact prior to mitigation:	**Low**
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:	**Medium**
Proposed mitigation:	**Most sensitive areas are excluded from development footprint. Dwellings should not extend into the fynbos on the south, the dune forest-thicket on the north-west and a band of dune thicket-forest along the slope on the eastern boundary.**
Residual impacts:	**Minor**
Cumulative impact post mitigation:	**Negligible, loss of 0.0003 percent of vegetation unit that is already well protected and exceeds conservation target of 19 %.**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Alternative: PREFERRED ALTERNATIVE	
CONSTRUCTION PHASE	
Potential impact and risk:	
Nature of impact:	**Stormwater runoff and erosion**
Extent and duration of impact:	**Local , long-term**
Consequence of impact or risk:	**Negative**
Probability of occurrence:	**High**

Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**Medium with mitigation**
Indirect impacts:	**Low – medium: dependant on severity of runoff and erosion without mitigation measures in place**
Cumulative impact prior to mitigation:	**Medium**
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:	• **During construction the contractor must ensure that stormwater and erosion prevention methods are used. These include the use of sandbags and silt traps to be installed where the natural flow of water has been pre-determined prior to construction.** • **The contractor must ensure that the site has been properly stabilised once vegetation has been removed.** • **Continuous monitoring for erosion impacts must occur during the construction phase.** • **The developer must ensure that a specialist is contracted to compile a stormwater management plan and implement a reliable stormwater drainage system. Continuous stormwater and erosion monitoring and maintenance must occur during the operational phase of the project.** • **Rainwater tanks must be implemented to collect stormwater from the roof of dwellings.** • **No unnecessary land clearance must take place.** **Hardened structures should be kept to a minimal.**
Residual impacts:	**Low**
Cumulative impact post mitigation:	**Low**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Alternative: PREFERRED ALTERNATIVE	
CONSTRUCTION PHASE	
Potential impact and risk:	
Nature of impact:	**Visual impact / Sense of place**
Extent and duration of impact:	**Local, short-term**
Consequence of impact or risk:	**Negative**
Probability of occurrence:	**Highly probable**
Degree to which the impact may cause irreplaceable loss of resources:	**None**
Degree to which the impact can be reversed:	**None**
Indirect impacts:	**Low**
Cumulative impact prior to mitigation:	**Medium**
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:	**Low**

Degree to which the impact can be managed:	**Medium**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **Screening and hoarding must be placed around the construction footprint.** • **Location and management of site access must be proactively manged to decrease visual clutter.** • **Storage on site must be kept to a minimal.** • **The design of the dwelling must consider the design parameters of the neighbourhood and follow suit.** • **Reconsideration must be given to the inclusion of the swimming pool in order to provide a low visual impact.** • **It is recommended that earth-tones be used when picking paint colours for the roof and exterior walls.** • **Down lights should be used as much as possible.** **Refer to the Architectural Guidelines report in Appendix G for precise building guidelines.**
Residual impacts:	**Low**
Cumulative impact post mitigation:	**Low**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Alternative: PREFERRED ALTERNATIVE	
CONSTRUCTION PHASE	
Potential impact and risk:	
Nature of impact:	**Noise pollution**
Extent and duration of impact:	**Local, short-term**
Consequence of impact or risk:	**Negative**
Probability of occurrence:	**Highly probable**
Degree to which the impact may cause irreplaceable loss of resources:	**None**
Degree to which the impact can be reversed:	**Irreversible – impact will only be experienced during the construction phase**
Indirect impacts:	**Negligible**
Cumulative impact prior to mitigation:	**None**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low - Medium**
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:	**Low**
Proposed mitigation:	• **Construction may only occur during weekdays from 07:00am – 17:00pm.** • **Staff must be instructed to keep noise levels at a minimum.** • **Where necessary, machines must be fitted with silencers to reduce noise impacts.**
Residual impacts:	**Negligible**
Cumulative impact post mitigation:	**Low – Medium**

Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
Alternative: PREFERRED ALTERNATIVE	
CONSTRUCTION PHASE	
Potential impact and risk:	
Nature of impact:	**Socio-economic – Job creation**
Extent and duration of impact:	**Local, short-term**
Consequence of impact or risk:	**Positive**
Probability of occurrence:	**Definite**
Degree to which the impact may cause irreplaceable loss of resources:	**N/A**
Degree to which the impact can be reversed:	**N/A**
Indirect impacts:	**Economic contribution to the local municipality**
Cumulative impact prior to mitigation:	**N/A**
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**N/A**
Degree to which the impact can be avoided:	**N/A**
Degree to which the impact can be managed:	**N/A**
Degree to which the impact can be mitigated:	**N/A**
Proposed mitigation:	**N/A**
Residual impacts:	**Minor**
Cumulative impact post mitigation:	**N/A**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low positive**
Alternative: PREFERRED ALTERNATIVE	
CONSTRUCTION PHASE	
Potential impact and risk:	
Nature of impact:	**Cultural – historic impacts**
Extent and duration of impact:	**Local, short term**
Consequence of impact or risk:	**Negative**
Probability of occurrence:	**Low**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**Low**
Indirect impacts:	**Low – medium, if cultural/historic artefacts are uncovered.**
Cumulative impact prior to mitigation:	**Low**
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:	**High**
Degree to which the impact can be managed:	**High**
Degree to which the impact can be mitigated:	**Low – medium**
Proposed mitigation:	**An archaeologist must be on site during ground clearing activities. Should any remains or artefacts be uncovered during the construction phase, all works must be halted with immediate effect and Heritage Western Cape must be contacted.**
Residual impacts:	**Low**
Cumulative impact post mitigation:	**Low/ negligible**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**

OPERATIONAL PHASE	
Potential impact and risk:	
Nature of impact:	**Visual impact / Sense of place**
Extent and duration of impact:	**Local, long-term**
Consequence of impact or risk:	**Negative**
Probability of occurrence:	**Probable**
Degree to which the impact may cause irreplaceable loss of resources:	**N/A**
Degree to which the impact can be reversed:	**Irreversible**
Indirect impacts:	**Low - Medium**
Cumulative impact prior to mitigation:	**Low - Medium**
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:	**Low**
Degree to which the impact can be managed:	**Medium**
Degree to which the impact can be mitigated:	**Medium**
Proposed mitigation:	• **The design of the dwelling must consider the design parameters of the neighbourhood and follow suit.** • **Reconsideration must be given to the inclusion of the swimming pool in order to provide a low visual impact.** • **It is recommended that earth-tones be used when picking paint colours for the roof and exterior walls.** • **Down lights should be used as much as possible.** **Refer to the Architectural Guidelines report in Appendix G for precise building guidelines.**
Residual impacts:	**Low – Medium**
Cumulative impact post mitigation:	**Low**
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Low**
DECOMMISSIONING AND CLOSURE PHASE	
Potential impact and risk:	
Nature of impact:	**Impact on biodiversity (flora and fauna)**
Extent and duration of impact:	**Local, short term**
Consequence of impact or risk:	**Negative**
Probability of occurrence:	**Low**
Degree to which the impact may cause irreplaceable loss of resources:	**Low**
Degree to which the impact can be reversed:	**High**
Indirect impacts:	**Negligible**
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:	**Medium**
Proposed mitigation:	**Retained natural vegetation must not be cleared (recommend incorporating into title deed)**
Residual impacts:	**Negligible**
Cumulative impact post mitigation:	**Negligible, loss of 0.0003 percent of vegetation**

	unit that is already well protected and exceeds conservation target of 19 %.
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	**Very low**

3.2 Specialist inputs and recommendations

1. Terrestrial Biodiversity Assessment – Jamie Pote 02/09/2026

The characteristics of the surrounding village and the complexity of the terrain limits the potential for mass clearing to take place. It is evident that the character of the village is such that elements of the natural environment are still retained between development. It is thus feasible to develop the portion of the site without significantly changing ecological processes. The following key characteristic support this conclusion:

- The vegetation is not considered to be under any imminent threat at a national level, nor at a regional level and can withstand further development without compromising conservation target significantly.
- No-go areas include the following:
  - dune-thicket along the eastern slope
  - the fynbos pocket on the southern portion
  - forest-thicket due on the north-western side of the site

- No cumulative impacts of significance are expected because of the development of the dwellings, providing recommendation and mitigation measures are adhered to, due to the limited disturbance of intact vegetation and concentration within an already urbanised context.
- Within the Erf 155 (±5.6 Ha), a portion of vegetation will be removed and the remaining natural, near natural and degraded Dune Thicket and Forest Thicket will not be developed within the greater Erf.
- The proposed ~2 500 m2 footprint accounts for a nominal 0.0003 percent of the total Goukamma Dune Thicket occurring nationally, hence the proposed activity will not pose any risk to conservation targets.
- It is reiterated that around 70 % of the site will not be developed and is unlikely to be developed due to slope, which far exceeds the conservation target of 19 %, within a vegetation unt where conservation targets are already exceeded in designated protected areas.
- All impacts are assessed to be of low significance before mitigation and can be reduced to low or very low with the implementation of the mitigation measures.
- All development alternatives are similar in extent and location within the site and hence impact significance). The preferred (linear) option should be adjusted to ensure that the dwellings do not extend into the dune on the north-western side of the site.
- Under status quo conditions it is likely that the disturbed areas will develop into Dune Thicket in time and the dune fynbos patch may develop into Dune Thicket also, if fire and other disturbance is excluded. It is likely that species diversity may decrease due to lack of disturbance.
- The findings of this report are aligned with the findings of a previous assessment undertaken for the site in 1018, 'Keurbooms River: Erf 155: Vegetation Sensitivity Analysis' (Conservation Management Services, October 2018).
- The specialist thus deems the proposed development to be within acceptable limits for development of such a site in terms of potential loss of habitat as well as risks to flora and

fauna species of conservation concern.

- No additional alternatives have been considered as the proposed layout is deemed to be the most appropriate for the site and was developed in alignment with the preliminary sensitivity analysis. No alternative acceptable or low sensitivity footprints are deemed to be applicable.

Recommendations:

- It is the conclusion of this terrestrial biodiversity assessment that the limited footprint site and associated infrastructure, including pipeline, sewer and other services can be constructed within acceptable terrestrial biodiversity impact limits.
- The portions of intact vegetation should be retained as per the recommendation of this report, including the dune-thicket and scrub forest-thicket along the eastern slope, the fynbos pocket on the southern portion and the forest-thicket due on the north-western side of the site.
- Vegetation that will not require direct clearing for the dwellings to be constructed should be retained as far as possible, in order to fit in with the surrounding developed landscape.
- The undeveloped portions of Erf 155 have limited development potential due to the steep slope. These areas have good representation of dune thicket and forest-thicket as well as some fynbos patches at the base (between the dune base and the road). It is unlikely that these will be developable due to slope and should thus be retained. In this regard, development of the 2 500 m2 within the dwelling footprints will only be 50 % of the proposed subdivision area (5 000 m2. In conjunction with the reminder of Erf 155 that will not be developed (± 4 Ha of Dune Thicket and Dune Forest, excluding some coastal vegetation and beach that falls on the south of the road but within the erf boundary), the footprint is well within regional and national conservation targets, even tho situated within a CBA area.
- It is noted that around 70 % of the site will not be developed and is unlikely to be developed due to slope, which far exceeds the conservation target of 19 %, within a vegetation unt where conservation targets are already exceeded in designated protected areas.

2. Geotechnical Report – Outeniqua Geotechnical Services

Earthworks: The presence of shallow rock may hamper earthworks and deep excavations but will generally provide a highly stable and suitable founding medium. Excavations deeper than 0.5m can be provisionally classified as "hard", requiring mechanical wedging and splitting (e.g. jackhammer/hydraulic pecker). No blasting is likely to be permitted in this residential area. It proposed that the proposed dwellings are designed and positioned in a manner which will take into account the terrain and underlying geotechnical conditions, such that minimal earthworks or terracing will be necessary (i.e. split levels or suspended structures).

The insitu soil and weathered rock is suitable for use as general fill material under surface beds and around foundations, less any oversize rock fragments and boulders >100mm.

No earthworks or development is recommended on slopes steeper than 1:4, unless special engineering solutions are developed, and no development is recommended within a buffer zone of 5m from the top of slopes which exceed a gradient of 1:2 (most notably along the southern boundary).

Foundations & floors: Single and/or double storey masonry or timber structures can be founded on conventional strip/pad foundations on clean, tight bedrock at a minimum depth of 0.5m below GL. Light reinforcement of strip footings is recommended to span across irregular rock/ soil ground conditions that may occur in linear trenches. A safe design bearing pressure on very soft, highly weathered bedrock is 250kPa. But since foundations may span across rock and soil, bearing pressures should be kept to max 150kPa. The engineer should inspect foundations before casting to ensure suitable founding conditions and no undetected problems or areas where no rock was encountered in trenches. Specialist geotechnical advice should be sought in cases where the conditions encountered in foundation trenches differ vastly from that reported in the investigations.

Fill material supporting ground floor concrete surface beds must be minimum G7 quality, compacted to 95% MDD and tested for approval by the engineer. Suspended floor slabs should be considered where fill heights are excessive to minimise importation of fill.

Driveway & parking areas: The subgrade conditions along the access road are likely to be good (gravelly) and will suffice as a selected layer. The access road should be cut with adequate camber for side drains to a roadbed level of approximately NGL-350mm, compacted to 93%MDD, and an imported G5 subbase layer of 150mm thick placed and compacted to 95%MDD. Cement/clay brick pavers can be placed on 20mm bedding sand.

Drainage: Vertical infiltration of stormwater will be restricted due to shallow rock, resulting in a significant percentage of run-off from the site. Effective stormwater drainage systems are recommended to collect, handle and discharge stormwater across the site such that it does not cause erosion on slopes or undermining of structures. Subsoil drains are required behind any

retaining walls as standard practice.

Conclusions:

The investigation indicates generally favourable geotechnical conditions for the proposed development and the site is considered generally suitable in terms of these conditions but there are some constraints that may require consideration from the designers.

Influence on development:

The development site and layout were chosen in accordance with the acceptable ground conditions stipulated by the specialist. Construction will need to further comply with the mitigation measures and recommendations made by the specialist.

3. Heritage Impact Assessment – Emmylou Rabe Bailey (Hearth Heritage)

Archaeology and palaeontology

According to the specialist reports, there is no evidence of historic or prehistoric occupation of the site.

Consequently, the site is regarded to be of low to negligible sensitivity from an archaeological and palaeontological heritage perspective and there are no objections to the proposed residential development on Erf 155 on condition that:

1. Due to the dense vegetation and limited archaeological visibility, a suitably qualified archaeologist should do a foot survey of the site intermittently during clearing of vegetation and once vegetation has been finally cleared before any earthworks are to commence.

2. Although unlikely, there may be buried or currently hidden archaeological material, including human remains, present on site and should these be uncovered or exposed during excavations or vegetation clearing, HWC should be notified immediately and all development work on site (preconstruction included) should be halted until these finds are investigated by HWC (Att: Ms

Waseefa Dhansay 021 483 9685).

3. No negative impact to significant palaeontological heritage is anticipated as the palaeontological

sensitivity of the geology of the development area is considered to be very low and there are no

objections on palaeontological heritage grounds. In the event of important fossil material being

identified during excavations, the HWC Fossil Finds Procedure must be implemented.

Visual and landscape character

Key conditions and mitigation measures that should be noted (in summary) include:

13. No structures, including a swimming pool, may be sited and constructed within the no-go areas, within

the 35m scenic route setback line or the 5m botanical/slope sensitivity setback line. Except for the

absolutely necessary linear infrastructure, no areas outside of the approximately 1448m² "developable

area" may be disturbed.

14. The building envelope, including chimneys, must not protrude above the 8m height restriction (this VIA

recommends that the existing ground level (NGL) is the base level from which maximum height

permitted is measured so that the height restriction slopes parallel to the existing ground level);

15. The colour palette for materiality and finishes must draw on the colouring of the natural environment,

preferencing mid-tone to darker colouring to blend with forest vegetation. If natural material such as

stone is used, the stone must be locally sourced and match the colouring (and, if possible, the

geological origins) of the site and receiving environment. Materials and finishes may not consist of

bright colours, highly reflective surfaces or gratuitous use of glass. Curtain walls, windows, skylights and

other glazing features must be shaded/set back under overhangs or similar to prevent glare, especially

in the direction of sensitive receptors identified. The use of exposed metal must be kept to a bare

minimum, and any potentially shiny or reflective surfaces must be avoided altogether, or covered

with

matte, non-reflective finishes.

16. All construction activities must be limited to the approved building footprint and a 2m offset buffer

zone all around the building footprint.

a. Limited and appropriate soft landscaping may extend further than the 2m offset around the

buildings within the Moderate and Low sensitivity areas (refer to the Sensitivity map), but

should avoid the protected forest and fynbos vegetation areas (High and Very high sensitivity).

17. The Landscape Plan must include a Vegetation protection methodology to manage Construction phase

impacts on vegetation (before, during and after), including guidelines on the re-establishment,

replacement and/or rehabilitation of vegetation per vegetation type in the case of disturbance.

18. No fence or wall should be permitted adjacent to and/or within view of the Scenic route, or within the

35m setback area as indicated on the Visual Sensitivity map. All fencing must be visually permeable and

no post top lighting, flood lights, peripheral/boundary security lights or uncovered luminaires of any

kind should be allowed.

19. All exterior lighting shall be located and controlled so as to avoid direct illumination, glare or reflection

onto any adjoining property or the scenic drive; provide precisely directed illumination to reduce light

"spillage" beyond the immediate surrounds of the light source, and should preferably be movement

activated.

20. The Landscape plan at SDP stage must show screening and softening of the building edges on the southern side of the buildings. The aim is to visually screen the first storey of the proposed development from the Scenic route views up the slope (the expectation is not that the building will be hidden, but rather that the screening vegetation allows the buildings to blend into the visual context more easily by reducing the starkness of new built features; especially where these meet the surrounding landscape).

21. Prior to the beginning of the Construction phase, sensitive vegetation must be marked clearly and

the rootzones of protected species and areas must be demarcated and made off limits to prevent compaction of soil and damage to the root zones. 22. Please refer to Item 7.2.5 for mitigation measures to be included in the EMPr.
4. Visual Impact Assessment – Fi Smit (Filia Visual Pty Ltd) Key conditions and mitigation measures that should be noted (in summary) include: 1) No structures, including a swimming pool, may be sited and constructed within the no-go areas, within the 35m scenic route setback line or the 5m botanical/slope sensitivity setback line. Except for the absolutely necessary linear infrastructure, no areas outside of the approximately 1448m² "developable area" may be disturbed. 2) The building envelope, including chimneys, must not protrude above the 8m height restriction (this VIA recommends that the existing ground level (NGL) is the base level from which maximum height permitted is measured so that the height restriction slopes parallel to the existing ground level); 3) The colour palette for materiality and finishes must draw on the colouring of the natural environment, preferencing mid-tone to darker colouring to blend with forest vegetation. If natural material such as stone is used, the stone must be locally sourced and match the colouring (and, if possible, the geological origins) of the site and receiving environment. Materials and finishes may not consist of bright colours, highly reflective surfaces or gratuitous use of glass. Curtain walls, windows, skylights and other glazing features must be shaded/set back under overhangs or similar to prevent glare, especially in the direction of sensitive receptors identified. The use of exposed metal must be kept to a bare minimum, and any potentially shiny or reflective surfaces must be avoided altogether, or covered with matte, non-reflective finishes. 4) All construction activities must be limited to the approved building footprint and a 2m offset buffer zone all around the building footprint. a. Limited and appropriate soft landscaping may extend further than the 2m offset around the buildings within the Moderate and Low sensitivity areas (refer to the Sensitivity map), but should avoid the protected forest and fynbos vegetation areas (High and Very high sensitivity). 5) The Landscape Plan must include a Vegetation protection methodology to manage Construction phase impacts on vegetation (before, during and after), including guidelines on the re-establishment, replacement and/or rehabilitation of vegetation per vegetation type in the case of disturbance. 6) No fence or wall should be permitted adjacent to and/or within view of the Scenic route, or within the 35m setback area as indicated on the Visual Sensitivity map. All fencing must be visually

permeable and no post top lighting, flood lights, peripheral/boundary security lights or uncovered luminaires of any kind should be allowed.

7) All exterior lighting shall be located and controlled so as to avoid direct illumination, glare or reflection onto any adjoining property or the scenic drive; provide precisely directed illumination to reduce light "spillage" beyond the immediate surrounds of the light source, and should preferably be movement activated.

8) The Landscape plan at SDP stage must show screening and softening of the building edges on the southern side of the buildings. The aim is to visually screen the first storey of the proposed development from the Scenic route views up the slope (the expectation is not that the building will be hidden, but rather that the screening vegetation allows the buildings to blend into the visual context more easily by reducing the starkness of new built features; especially where these meet the surrounding landscape).

9) Prior to the beginning of the Construction phase, sensitive vegetation must be marked clearly and the rootzones of protected species and areas must be demarcated and made off limits to prevent compaction of soil and damage to the root zones.

10) Please refer to Item 7.2.5 for mitigation measures to be included in the EMPr.

Should the conceptual architectural proposal undergo significant change (especially in terms of height, siting, building envelope and massing, fencing, lighting and perimeter treatment or any feature that would constitute a change to the visual impact of the proposed development), a Visual statement must be prepared by a suitably qualified visual specialist to determine if the findings of this study remain unchanged.

5. Animal Species Compliance Statement – Adam Labuschagne (Capensis) September 2025

The study area has been identified as a site of medium sensitivity under the animal sensitivity category by the Screening Tool. The results of the site visit support this level of sensitivity. The majority of the site is covered by a dense Forest-thicket vegetation representative of Keurbooms Thicket Forest as described by Vlok et al., (2008), with a small area of dune thicket-fynbos vegetation, similar to fynbos habitats found within areas mapped as Goukamma Dune Thicket vegetation. Much of the site is deemed to be in an intact state, with small areas classified as semi-intact. These include areas of historic disturbance or areas where vegetation has recently been cleared. Faunal species detected at the site are listed in Appendices 1 & 2.

Three of species of conservation concern (SCC) were identified as potentially occurring at the site. These were flagged either by the National Screening Tool or from other records of species' presence (GBIF). The three species in question are Chlorotalpa duthiae (Duthie's Golden Mole), Sarophorus punctatus, and Sensitive Species 8. Despite suitable habitat for these three SCC, no evidence for any was found at the site. The Site Ecological Importance of the property is deemed to be high based on the following characteristics; (1) presence of habitat that could potentially host SCC, (2) good habitat connectivity, (3) and the presence of species that have a high likelihood of either persisting at the site during disturbance events or are likely to return to the site once disturbance has ceased. For sites with high ecological importance, proposed development must be of low impact. Given the small site footprint, abundance of similar vegetation in the surrounding landscape, and high

likelihood of faunal species persisting in the environment even after the disturbance associated with the construction of the development, the proposed residence at ERF 155 is supported.
6. Traffic Impact Statement – Innovative Transport Solutions Based on the evaluation in this report, the conclusions and recommendations are as follows: The existing traffic volumes along the surrounding road network in the site vicinity is low. Trips generated by the proposed development will be less than 10 trips during the typical weekday peak hours, which is low. The surrounding road network has sufficient capacity to accommodate the trips associated with the proposed development, even during the peak holiday periods. The access spacing is acceptable and the available shoulder sight distance in both directions along Main Street is sufficient. No public transport or NMT facilities are recommended for the development. The proposed development will have a low negative significance in terms of the transport impact. It is recommended that the development be approved from a transport impact perspective. Influence on development: The development will not have traffic impacts.
7. Agricultural Compliance Statement – SoilsZA (Johann Lanz & David Lakey, April 2025) The overall conclusion of this assessment is that the proposed development is acceptable because it leads to no loss of future agricultural production potential. The cropping potential of the site is limited by the combination of terrain constraints (steep slopes), and soil constraints (deep soils with low water and nutrient holding capacity). Because of these constraints, the site is unsuitable for viable rainfed crop production. Furthermore, factors other than terrain, and soil capability also constrain the potential of the property to practically deliver agricultural produce and therefore influence its agricultural production potential.

These factors include:

• its location, leaves it surrounded largely by non-agricultural land uses

• municipal ownership of the land which would also discourage the necessary investment to establish cropland,

• the fact that land use planning in the spatial development framework designates the site for non-agricultural use,

For these reasons, the site will never be viably utilised for agricultural production and its potential is therefore assessed here as non-existent.

This assessment therefore disputes the high sensitivity classification of the site by the screening tool and verifies the entire site as being of low to medium agricultural sensitivity because of its assessed cropping potential.

An agricultural impact must by definition cause a change to the future agricultural production potential of land. If there is no change, there is no impact. In this case, the entire development footprint is considered to be below the threshold for needing to be conserved as agricultural production land because of the limitations that make it unsuitable as viable cropland. The proposed development on this land will result in no loss of future agricultural production potential in terms of national food security.

Due to the facts that the proposed development will not occupy scarce, viable cropland, the overall negative agricultural impact of the development (loss of future agricultural production potential) is assessed here as being of low significance and as acceptable.

From an agricultural impact point of view, it is recommended that the proposed development be approved. The conclusion of this assessment on the acceptability of the proposed development and the recommendation for its approval is not subject to any conditions.

4. LEGISLATIVE REQUIREMENTS

4.1 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 Proponent), 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.

4.2 Legislation

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

LEGISLATION	ADMINISTERING AUTHORITY
National Environmental Management Act (Act No. 107 of 1998) and the 2014 EIA Regulations as amended	Department of Forestry, Fisheries and the Environment
Environmental Conservation Act (Act No. 73 of 1989)	Department of Forestry, Fisheries and the Environment
National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Department of Forestry, Fisheries and the Environment
National Environmental Management: Protected Areas Act (Act No. 57 of 2003) as amended by the National Environmental Management: Protected Areas Act No.21 of 2014	Department of Forestry, Fisheries and the Environment
National Forests Act (Act No. 84 of 1998)	Department of Forestry, Fisheries and the Environment
Forestry Laws Amendment Act (Act No. 35 of 2005)	Department of Forestry, Fisheries and the Environment
National Water Act (Act No. 36 of 1998)	Department of Water and Sanitation
Conservation Of Agricultural Resources Act (Act No. 43 of 1983)	Department of Forestry, Fisheries and the Environment
National Heritage Resources Act (Act No. 25 of 1999)	The South African Heritage Resources Agency

4.3 Project Responsibilities

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

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

- Protect the receiving environment.
- Guide, advise and consult the relevant authority on environmental issues.
- 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 Proponent, Site Manager and the ECO. A tabulated synopsis of relevant responsibilities is appended hereto.

5. REPORTING PROCEDURES

5.1 Documentation

The following documentation must be kept on site in order to record compliance with the EMPr:
An Environmental File which includes:

- Hardcopy of the EMPr;
- Copy of the Environmental Authorisation.
- 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.

5.2 Environmental Register

The Proponent 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.

5.3 Non-Conformance Report

A Non-Conformance Report (NCR) will be issued to the Proponent 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 Proponent in writing. Preceding the issuing of a NCR, the Proponent 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 an 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 Proponent should sign the Close-Out portion of the Non-Conformance Form and file it with the contract documentation.

5.4 Environmental Emergency Response

The Proponents 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.

6. COMPLIANCE WITH THE EMPr

6.1 Monitoring and Compliance

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

- The ECO has the authority to instruct the Proponent to cease a particular operation causing or liable to cause significant environmental damage, and issue fines or penalties for non-compliance of the EMPr.

- An Environmental Control Officer (ECO) must inspect the site every week and compile a monitoring report on a monthly basis until rehabilitation is successful.

- The holder of the environmental authorisation (the Proponent) is responsible to ensure that an environmental audit report is submitted to the Department of Environmental Affairs and Development Planning (DEA&DP) as per the timeframes stipulated in the Environmental Authorisation (EA).

6.2 Auditing Process

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

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

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

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

6.3 Non-Compliance

Definition

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

- Any deviation by the Proponent from the environmental conditions and requirements as set out in the EA and EMPr – or,
- Any contravention by the Proponent 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 Proponent to the environmental conditions and requirements listed in the EA and EMPr,
- An activity that if left unattended will escalate the degree, severity or extent of the environmental impact.

B. General Non-Compliance

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

6.4 Issuing a Non-Compliance

Non-compliance may be issued to:

- The Proponent
- Any representative of the Proponent

6.5 Process of Issuing Non-Compliance

The appointed Environmental Control Officer (ECO) may issue a formal non-compliance to the Proponent. A copy of the non-compliance issued will be placed in the EMPr file. The Proponent 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.

6.6 Failure to complete corrective actions

In the event that the Proponent 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 Proponent.

The Proponent 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 Proponent or any of his staff.

On receiving a notice of non-compliance, the Proponent 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 Proponent's account.

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

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

6.7 Unlawful Activity/ies

NEMA and its Regulations entitle environmental authorities to administer a fine not exceeding R5 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.

7. AMENDMENTS TO THE EMPr

This EMPr outlines the environmental practices and mitigation measures to be adhered to during the construction and rehabilitation phases (including all maintenance works) 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.

8. 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.

9. ENVIRONMENTAL MANAGEMENT PROGRAMME

9.1 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 Proponent prior to the start of the construction phase. The following authorisations and permits are relevant to this development: 1. Environmental Authorisation – Department of Environmental Authorisation and Development Planning. 2. Protected plant removal – Forestry Department. 3. Fauna permit (Indigenous trees with active bird nests or other significant biodiversity features may not be destroyed without a valid Fauna Permit from the provincial conservation authority) - Western Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform ("DAERL") 4. Construction permits. Section 7 of the National Forest Act (NFA), act no 84 of 1998 as amended provides for the prohibition of the destruction of indigenous trees in any natural forest without a license. Under section 62 (1) of the NFA any person	Proponent	Once-off

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	who contravenes the prohibition of certain acts in relation to trees in natural forests referred to in Section 7 (1) is guilty of a second category offence. A person who is guilty of a second category offence may be sentenced on a first conviction for that offence to a fine or imprisonment for a period of up to two years, or to both a fine and such imprisonment. Section 15 of the NFA, prohibits the destruction of protected trees without a license- "No person may cut, damage, destroy or remove any protected tree; or collect, remove, transport, export, purchase, sell donate or in any other manner acquire or dispose of any protected tree……." Anyone contravening this prohibition, is guilty of a first category offence, and can be sentenced to up to 3 years imprisonment, or a fine, or both. Indigenous trees with active bird nests or other significant biodiversity features may not be destroyed without a valid Fauna Permit from the provincial conservation authority, the Western Cape Department of Agriculture, Environmental Affairs, Rural Development and Land Reform ("DAERL"), if these would be affected. If, for any reason, a protected tree was missed in the original survey, it's location will have to be assessed, taking all aspects into account, during the initiation of the construction phase. A permit must be applied for from the Forestry Department prior to cutting or removal; however, saving the protected tree/s is the priority.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Appointment of Environmental Control Officer	**Appointment of Environmental Control Officer**		
	An Independent ECO must be appointed at the Proponent's cost to monitor the implementation of the EMPr.	Proponent & ECO	Once-off
	The nomination of the ECO must be given to DEA&DP, in writing within (7) seven days of appointment. 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 Site Laydown Areas Map	**Camp Site Map**		
	A map of the laydown area, stockpile areas, and the site camp's exact locations must be provided to the Competent Authority for approval prior to commencement.	ECO/ Proponent	Once-off
Preparation of Method Statements	**Method Statements**		
	Method Statements must be submitted by the Proponent to the ECO and must be adhered to by the Proponent. These relate to water and stormwater	Proponent	Once-off

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	management requirements, solid waste management requirements, the storage of hazardous materials (if applicable), and 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.	Proponent	Once-off
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**		
	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.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	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: ➢ 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.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	All contractors, sub-contractors and casual labourers must acknowledge their understanding of the EMPr and environmental responsibilities by signing an induction attendance record.	ECO	Once-off
	Staff, operating equipment, shall be adequately trained and sensitized to any potential hazards associated with their tasks.	Proponent	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 & Proponent	
	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.		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	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). 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**		
	No vehicles may drive onto the adjacent properties and any other no-go areas.	Site Manager	On-going
	Traffic calming during the construction phase will be a necessity.	Site Manager	On-going
	Site Management		
	Adequate drainage and erosion protection must be provided around the site	Site Manager	On-going

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	and where necessary. This can be in the form of sand bags and/or silt fence traps.		
	Access points and other cleared surfaces must be dampened whenever necessary and especially in dry and windy conditions to avoid excessive dust. Alternatively, a non-chemical binding product could be used.		
Sewage and Sanitation	**Ablutions**		
	Toilets must be positioned in an appropriate place, also taking into consideration, gradient of the land. Such facilities, which shall comply with local authority regulations, shall be maintained in a clean and hygienic condition. Their use shall be strictly enforced.	Site Manager	Immediately & on-going
	The Site Manager must ensure that toilets are cleaned regularly.		On-going
	Unauthorised spilling of waste from temporary toilets 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.		
Social Impacts	**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	Site Manager	On-going

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	number on which they may contact the Proponent/ Site Manager.		
	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.		
Equipment lay-down and storage	**Storage Areas**		
	Choice of location for equipment lay-down and storage areas must take into account prevailing winds, general on-site topography and water erosion potential of the soil. Impervious surfaces, bunded areas or drip trays must be provided where necessary to catch and contain small leaks, drips, and spills from equipment, machinery, or containers before they reach the floor or cause damage.	Site Manager	On-going
	Equipment lay-down and storage areas must be designated to areas that will be developed, demarcated and sign-posted.		
Conservation of the Natural Environment	**Erosion and Stormwater Control**		
	Land clearance must only take place in areas that will be developed. Areas outside of the development footprint must be treated as "no-go" areas.	Site Manager	Immediate and on-going

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Soil disturbance during the removal of alien invasive plants must be minimised as much as possible.		Throughout the duration of the project
	Storm water control must be undertaken to prevent soil loss from the site. Refer to the Stormwater Management Plan further in this report for specific measures.		Immediately
	Erosion prevention and control measures must be implemented. This may be by the use of mulch bags or silt fences.		On-going
	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.		
	Earth, stone or rubble is to be properly disposed of so as not to obstruct natural water pathways over the site.		
	Fauna and Flora		
	Areas which are identified by the Environmental Control Officer (ECO) as being ecologically sensitive and which are adjacent to the site are to be suitably demarcated to prevent damage by construction practices. These areas are to be recognised as "no-go" areas.	ECO & Site Manager	Immediately

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	No natural vegetation 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 during rehabilitation.		On-going
	The ECO must identify and make known to the team all Red Data listed vegetation species. All permits for the removal/ translocation of the identified protected vegetation species must be obtained prior to any ground clearance from the Department of Agriculture, Forestry and Fisheries (DAFF).		On-going
	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.	ECO & Site Manager	Immediate and On-going
	Disturbance to birds, animals and reptiles and their habitats must be minimized wherever possible.	Site Manager	
Waste Management	**On-Site Waste Management**		
	The excavation and use of rubbish pits is forbidden.	Site Manager	On-going
	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*		On-going and monitored weekly

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	strictly forbidden in terms of the Conservation of Agricultural Resources Act (CARA), especially if in seed; unless stored in a completely sealed container.		
	Littering on the site is forbidden and the site shall be cleared of litter at the end of each working day.		On-going monitoring
	An adequate number of general waste bins must be arranged around the site to collect all domestic refuse, and to minimise littering.		
	Solid waste must be managed and separated into recyclable and non-recyclable and disposed of accordingly.		
	All waste generated during operation is to be disposed of at a facility registered in terms of section 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008).		
	Maintain record-keeping of waste disposal during the construction and operational phase		
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.	Site Manager	On-going

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Cement and other potential environmental pollutants must be stored within an impermeable bunded, roofed and sign posted area.		
	Cement and other potential environmental pollutants must be mixed on an impermeable surface that is bunded to prevent the leakage of pollutants onto the ground (if necessary).		
	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.		
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.	Site Manager	Immediate and On-going
	If any archaeological sites/materials are exposed, mitigation regarding the finds must be conducted with Heritage Western Cape regarding the destiny of the material.		
	If Heritage Western Cape agrees to the removal of the material, an		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	archaeologist must apply for a permit from Heritage Western Cape to scientifically excavate/collect the material.		
Safety and Security	**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.	Site Manager	On-going
	Firefighting equipment must be present on site at all times. All equipment on site must be used in accordance with the Occupational Health and Safety Act regulations of South Africa (OHSA), Act No. 85 of 1993); staff must be trained in firefighting procedures.		
	No unauthorised person may be permitted to enter the site without prior permission of the site manager.		
	Vehicle speeds shall not exceed 40km/h along dust roads or 20km/h when traversing unconsolidated and non-vegetated areas		

9.2 REHABILITATION AND MAINTENANCE

<u>*All rehabilitation measures must be implemented with consultation with a Biodiversity Specialist</u>

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.	Proponent, Site Manager & ECO	On-going site maintenance
	Erosion prevention and control measures must be fully implemented (if necessary).		
	All rehabilitated areas must be maintained through weekly inspections until the 80% success rate has been achieved (if applicable).		
	Encroachment of invasive alien plants in this regard will need to be monitored on a regular basis to prevent re-infestation.		
Stormwater Management	**Stormwater**		
	Any negative stormwater effects, related to the operational phase, must be remediated.	Proponent & 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. Refer to the Stormwater Management Plan provided further in this report.		
Traffic	**Traffic Calming**		
	As a safety precaution, the applicant could consider the use of convex mirrors at the entrance/exit of the property to provide a clearer view of oncoming vehicles or cyclists, and if need be, additional traffic safety methods could be incorporated.	Proponent & Site Manager	Once-off and potential on-going
Sewerage	**Conservancy Tank Contingency Measures**		
	Early detection: The property owner must regularly inspect tanks and associated pipework for signs of leakage, damage, unusual odours, or abnormal filling rates	Proponent	On-going site maintenance
	Prevent overflow: Tank levels must be monitored, and pump-out must be arranged before the tank reaches capacity.		
	Emergency pump-out: If a tank approaches capacity unexpectedly, the owner must arrange an urgent pump-out by an appropriately licensed service		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	provider.		
	Leak or failure: In the event of a leak or structural failure, use of the affected system must cease immediately and the tank must be emptied and repaired/replaced.		
	Sewage spill: Any sewage spill must be contained immediately to prevent migration into surrounding soil, vegetation, or stormwater infrastructure. Contaminated areas must be appropriately cleaned and rehabilitated.		
	Temporary alternative: Where the system cannot be repaired immediately, temporary sanitary/wastewater arrangements must be provided until the system is restored.		
	Service-provider records: Records of emergency pump-outs, repairs and any incidents must be retained by the property owner.		
	Reporting: Any significant overflow, leakage or sewage spill must be reported to the relevant municipal authority and environmental authority where required.		
	Under no circumstances may untreated effluent be intentionally discharged into the surrounding environment, stormwater system, dune system or coastal environment.		
	The individual property owner remains responsible for implementing and funding the contingency response for their conservancy tank.		

10. STORMWATER MANGEMENT PLAN

1. Purpose

This Stormwater Management Plan (SWMP) has been prepared to provide a conceptual framework for the management of stormwater associated with the proposed development of two residential units and associated infrastructure on a portion of Erf 1180, Keurboomstrand.

The objectives of the plan are to:

- Minimise increases in post-development runoff;
- Prevent erosion and sediment transport;
- Protect slope stability;
- Maintain natural hydrological processes;
- Protect biodiversity and ecological functioning;
- Prevent adverse impacts on the Coastal Protection Zone;
- Promote sustainable drainage through the application of Sustainable Drainage Systems (SuDS).

2. Stormwater Management Principles

The stormwater management strategy is based on the following principles:

- Retain runoff as close as possible to where rainfall occurs;
- Maximise infiltration and groundwater recharge;
- Reduce peak flow rates;
- Slow the movement of runoff across the site;
- Mimic pre-development hydrological conditions;
- Avoid concentration of stormwater on steep slopes;
- Prevent erosion and sedimentation.

3. Proposed Sustainable Drainage Measures

3.1 Roof Water Harvesting

All roof runoff from the proposed dwellings shall be directed to rainwater harvesting tanks. Tanks should have an additional 40 mm overflow outlet be placed 1/3 down from the top of the rainwater tank. This ensures that there is spare capacity in the tank to take up peak rainfall.

Allow for 5000L per person on average.

Measures include:

- Rainwater storage tanks connected to roof gutters;
- Re-use of harvested water for irrigation and domestic non-potable uses;
- Controlled overflow to downstream SuDS features.

This measure will reduce runoff volumes and improve water conservation.

3.2 Permeable Surfaces

Impervious surfaces shall be minimised.

The following measures are proposed:

- Permeable paving for driveways and parking areas;
- Gravel pathways where practical;
- Retention of natural groundcover between developed areas.

3.3 Vegetated Swales

Shallow vegetated swales shall be used to convey runoff where required.

The swales will:

- Slow stormwater velocities;
- Promote infiltration;
- Trap sediment;
- Reduce erosion potential.

Swales shall be planted with indigenous vegetation suitable for local conditions.

3.4 Infiltration Trenches

Infiltration trenches or soakaway systems shall be installed downslope of developed areas where geotechnically appropriate.

These systems will:

- Encourage infiltration;
- Reduce peak runoff;
- Prevent concentrated discharge.

Final design shall be confirmed by the project engineer and geotechnical specialist.

3.5 Bioretention Areas / Rain Gardens

Small landscaped bioretention areas shall be incorporated where feasible.

These systems will:

- Temporarily store runoff;
- Promote infiltration;
- Improve water quality;
- Reduce sediment transport.

4. Erosion Prevention and Slope Protection

To protect slope stability and prevent erosion:

- Existing indigenous vegetation shall be retained wherever possible;
- Vegetation clearance shall be restricted to approved development areas;

- Disturbed areas shall be rehabilitated immediately following construction;
- No concentrated discharge of stormwater shall be permitted onto steep slopes;
- Energy dissipation structures shall be installed where required;
- Stormwater outlets shall discharge onto stable vegetated areas.

5. Construction Phase Stormwater Management

During construction:

- Temporary berms and cut-off drains shall be installed where required;
- Stockpiles shall be protected from erosion;
- Sediment fences shall be used downslope of disturbed areas;
- Exposed surfaces shall be stabilised as soon as practicable;
- Construction materials shall not be stored within drainage pathways.

6. Operational Phase Management

The property owner shall ensure:

- Regular inspection of gutters and downpipes;
- Maintenance of rainwater tanks;
- Removal of accumulated sediment from swales and infiltration systems;
- Maintenance of vegetative cover;
- Repair of erosion damage should it occur.

7. Conclusion

The proposed stormwater management approach applies Sustainable Drainage System (SuDS) principles to maintain pre-development runoff characteristics, reduce peak stormwater flows and protect the ecological and geotechnical integrity of the site. Through the retention of indigenous vegetation, stormwater attenuation, infiltration measures and erosion control interventions, the proposed development is not expected to result in significant stormwater-related impacts.

In accordance with the recommendations of the geotechnical assessment, stormwater will be collected and conveyed in a controlled manner and no concentrated discharge will be permitted onto the steep southern slope.

11. ALIEN PLANT CONTROL PROGRAMME

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

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.

10.1 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.

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.

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.

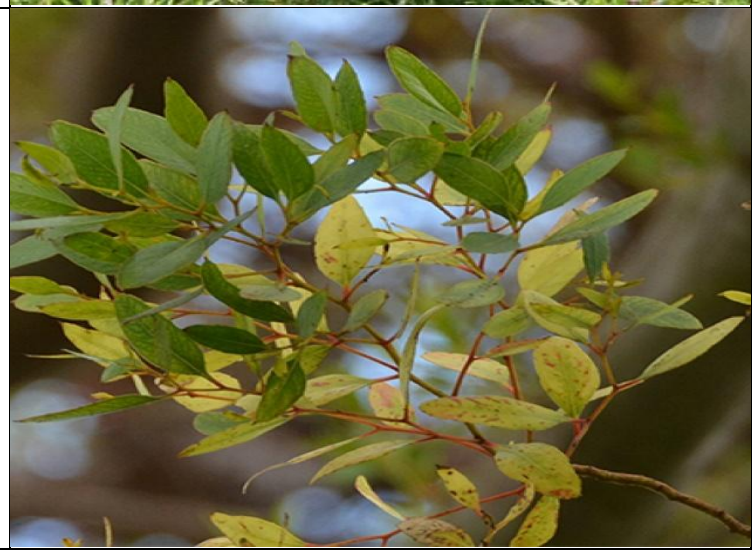
11.2 Top 10 Alien Vegetation Affecting the Western Cape (Cape Nature, *Alien vegetation management*, 2016)

COMMON NAME	BOTANICAL NAME	PLANT TYPE	CATEGORY	IDENTIFICATION
Australian myrtle	*Leptospermum laevigatum*	Tree	1	

Black wattle	*Acacia mearnsii (Fabaceae)*	Tree	2	
Blackwood	*Acacia melanoxylon*	Tree	2	

Cluster pine	*Pinus pinaster*	Tree	2	
Long-leafed wattle	*Acacia longifolia*	Shrub	1	

Port Jackson	*Acacia saligna*	Tree	1	
Rooikrans	*Acacia cyclops*	Shrub/ tree	1	

Silky hakea	*Hakea sericea*	Shrub	1	
Spider gum	*Eucalyptus conferruminata*	Tree	1	

Stinkbean	*Paraserianthes lophantha (Fabaceae)*	Shrub/tree	1	

11.3 Ways to Eradicate Alien Vegetation

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

Step 1

The first step of the 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 Alien Invasive Species 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.

Mechanical Methods

Hand-pulling

This method of removal is only really an option during the summer months and when the alien plant species 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 alien plant species 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.

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 alien plant species should not be excluded as a possible option. Once the alien plant species 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.

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.

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 Alien 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.

11.4. Species Planting List

Please consult with a Botanical specialist for a comprehensive list.

12. 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.

13. RESPONSIBILITIES

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

FUNCTION	RESPONSIBILITY
Proponent	• The Proponent is ultimately responsible for the ensuring compliance with all the requirements associated with the construction, operation, rehabilitation and decommissioning phases of the project.
Site Manager	• The Site Manager is responsible to ensure that all necessary communication and submission of required documentation concerning this project is submitted to the relevant authorities. • The site manager 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 DEA&DP 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 Proponent, 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 RESIDENTIAL DEVELOPMENT AND ASSOCIATED INFRASTRUCTURE ON A PORTION OF ERF 1180, KEURBOOMSTRAND, PLETTENBERG BAY

PROPONENT:

Signed: …….. Date: …….....

SITE MANAGER:

Signed: …….. Date: …….....

ENVIRONMENTAL CONTROL OFFICER

Signed: …….. Date: …….....

Appendix A: 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 2. BAR – Residential dwelling on Erf 62, Cape St Francis, EC 3. BAR – Residential dwelling on Erf 154, Cape St Francis, EC 4. BAR – Residential dwelling on Erf 347, Cape St Francis, EC 5. BAR – Residential dwelling on Erf 8 Konkiebaai, EC 6. BAR – Proposed Residential Apartments, Erf 155 Keurbooms, WC (in progress) 7. BAR – Residential dwelling on Erf 761 Brenton, Knysna, WC 8. BAR – Demolition and reconstruction of a residential dwelling, Erf 1256, St Francis Bay, EC 9. BAR – Residential dwelling on Erf 1510, St Francis Bay, EC 10. Desktop Study – Proposed town houses, Erf 2301, Albertina 11. S24G – Construction of a dam on Portion 3 of the farm 71 Roodeheuwel, Oudtshoorn, WC 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 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 15. S24G – Construction of an in-stream dam and infilling/blocking of a watercourse, Farm 178 Klaarstroom, Prince Albert, WC 16. Screening – Monkeyland KZN 17. BAR - Residential dwelling on Erf 406, Oyster Bay, EC 18. BAR – Residential apartments on RE/3420, St Francis Bay, EC 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

	20. EA Part 2 Amendment – Raphaeli Waldorf School, Plettenberg Bay, WC 21. BAR - Proposed New Regional Cemetery on Portion 33 of The Farm Hill View No. 437, Plettenberg Bay, Western Cape 22. BAR - Proposed Cultivation Of 11 Hectares of Land to Plant Macadamia and Avocado Trees on Erf 385, Seven Passes Road, Hoekwil, George Municipality, Western Cape 23. BAR - The Proposed Construction of a Residential Dwelling and Four Self-Catering Guest Cottages on Erf 2003, Wilderness, Western Cape 24. BAR - Proposed Construction of a Boundary Wall and Storage Area with Viewing Deck, Erf 3132, St Francis Bay, Eastern Cape 25. BAR - Proposed Stabilisation of a Portion of The Keurbooms River Embankment South of the Plettenberg Bay Angling Club, RE 1 of the farm Hanglip No.305 26. Screening - Gauteng Tourism: West Rand Birding Route 27. Screening - Gauteng Tourism: Johannesburg Cross-Border Shoppers Precinct 28. Screening - Hammersdale Infrastructure Upgrades Project
Environmental Management Programmes	1. Dippenaar boardwalk, Portion 111 on the farm Brakkloof no.443 and a portion of Erf 2132, Plettenberg Bay, WC 2. The reconstruction of a residential dwelling, Portion 161 Of the Farm Uitzicht no. 216, Knysna, WC 3. Residential dwelling on Erf 23, Cape St Francis, EC 4. Residential dwelling on Erf 62, Cape St Francis, EC 5. Residential dwelling on Erf 154, Cape St Francis, EC 6. Residential dwelling on Erf 347, Cape St Francis, EC 7. Residential dwelling on Erf 761 Brenton, Knysna, WC 8. The reconstruction of Featherbed Restaurant, Portion 59 of farm 216, Knysna, WC 9. S24G – Construction of a dam on Portion 3 of the farm 71 Roodeheuwel, Oudtshoorn, WC 10. Construction of a grass berm around Lake Brenton Estate, Portion 92 of 53 of farm Uitzicht no.216 11. MMP - Lake Brenton Estate sea wall repairs 12. Dune stabilization, RE/1692, Sedgefield, WC 13. Residential dwelling on Erf 406, Oyster Bay, EC 14. Residential apartments on RE/3420, St Francis Bay, EC 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 16. Extension of the Riverlea Airstrip, Underberg, KZN 17. Upgrade of the Richards Bay Harbour Entrance Gate, KZN 18. EMPr - Proposed Crabs Creek Development Portion 29 of the Farm Uitzicht 216, Knysna
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

Contact Information:

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E-mail : samantha@ecoroute.co.za
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.

Mrs. Samantha Janine Teeluckdhari	S. Teeluckdhari	October 2026
Name of Expert	Signature	Date