



ECO ROUTE ENVIRONMENTAL CONSULTANCY

CONSTRUCTION & OPERATIONAL ENVIRONMENTAL MANAGEMENT PROGRAMME

In terms of the **Section 24G** application process for the consequences of unlawful commencement of listed activity/ies in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), ("NEMA") for:

Rectification of unlawful clearance of indigenous vegetation and proposed construction of a residential dwelling on Erf 1216 Sea Vista, St Francis Bay, Kouga Municipality, Eastern Cape.

DEDEAT REF:



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Compiled by:

Eco Route Environmental Consultancy
Tel: 044 343 2232

EAP Signature: _____

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This EMPr will need to be amended to contain specific conditions if Environmental Authorisation is granted.

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:

<p>(a) Details of</p> <p>(i) the EAP who prepared the EMPr; and</p> <p>(ii) The expertise of that EAP to prepare an EMPr, including a curriculum vitae.</p>	<p>This EMPr was prepared by Janet Ebersohn of Eco Route Environmental Consultancy.</p> <p>Please see attached CV of EAP.</p>
<p>(b) A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.</p>	<p>This EMPr covers all aspects involved in the rectification of unlawful clearance of indigenous vegetation and proposed construction of a residential dwelling on Erf 1216 Sea Vista, St Francis Bay, Kouga Municipality, Eastern Cape</p> <p>Section 2 provides specific project details.</p>
<p>(c) A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers</p>	<p>Section 2 provides GIS mapping which superimpose the proposed activity onto environmentally sensitive areas.</p>
<p>(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 –</p> <p>(i) Planning and design;</p> <p>(ii) Pre-construction activities;</p> <p>(iii) Construction activities;</p> <p>(iv) Rehabilitation of the environment after construction and where applicable post closure; and</p> <p>(v) Where relevant, operation activities</p>	<p>Addressed in Sections 3 and 9.</p>
<p>(e) A description and identification of impact management outcomes required for the aspects contemplated above.</p>	<p>Addressed throughout the EMPr, specifically in Sections 3 and 9.</p>

<p>(f) A description of the proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated above will be achieved and must, where applicable include actions to –</p> <p>(i) Avoid, modify, remedy control or stop any action, activity or process which causes pollution or environmental degradation;</p> <p>(ii) Comply with any prescribed environmental management standards or practises;</p> <p>(iii) Comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable.</p>	<p>Addressed throughout the EMPr, specifically in Sections 4 and 9.</p>
<p>(g) The method of monitoring the implantation of the impact management actions contemplated above.</p>	<p>Section 6.</p>
<p>(h) The frequency of monitoring the implementation of the impact management actions contemplated above.</p>	<p>Section 6.</p>
<p>(i) An indication of the persons who will be responsible for the implementation of the impact management actions.</p>	<p>Sections 6, 8, 9 and 13.</p>
<p>(j) The time periods within which the impact management actions must be implemented.</p>	<p>Section 9.</p>
<p>(k) The mechanism for monitoring compliance with the impact management actions.</p>	<p>Sections 5 and 6.</p>
<p>(l) A program for reporting on compliance, taking into account the requirements as prescribed in the Regulations.</p>	<p>Section 6.</p>
<p>(m) An environmental awareness plan describing the manner in which –</p> <p>(i) The applicant intends to inform his or her employees of any environmental risk which may result from their work; and</p>	<p>Sections 8 and 9.</p>

(ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment	
(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 EMPr must be read in conjunction with the Basic Assessment Report dated September 2022, and all necessary specialist reports. All recommendations, relevant conditions and mitigation measures provided in these documents must also be adhered to.

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

These requirements will have a financial impact on the projects 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 the operational phase of this project.

2. PROJECT DETAILS

Eco Route Environmental Consultancy has been appointed by the Applicant **Birdman Investments (Pty) Limited**, to ensure rectification of unlawful commencement of an activity in terms of Section 24G of the National Environmental Management Act (Act 107 of 1998) for the 'unlawful commencement' of listed activities: clearance of indigenous vegetation, on erf 1216 Sea Vista, St Francis Bay, Kouga Municipality, Eastern Cape.

Erf 1216 covers an area of approximately 985 m² and is located in a coastal dune landscape. Most properties in the area have been developed for residential dwellings, but some properties adjacent to Erf 1216 remain undeveloped and still host indigenous vegetation. Approximately 982 m² of vegetation that occurred on site was cleared for the development of a residential dwelling within 100 meters of the highwater mark of the sea. As such, a Section 24G rectification process is required for the unlawful commencement of listed activities in terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989) (ECA) and the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA).



Figure 1: Location of Erf 1216 Sea Vista, St Francis Bay, Kouga Municipality, Eastern Cape

The clearing of vegetation was commenced in error as the Applicant was not aware of the Environmental Legislation at the time. This was undertaken for the construction of a double story dwelling with a footprint of 463 m² and a coverage of 48% of the property (figure 2). Access will be

sand mining, invasion by alien plants and urban sprawl (coastal development). While this vegetation type is poorly protected (Grobler et al., 2018), it is currently listed as Least Concern in terms of conservation status (SANBI, 2018b; Skowno et al., 2019).

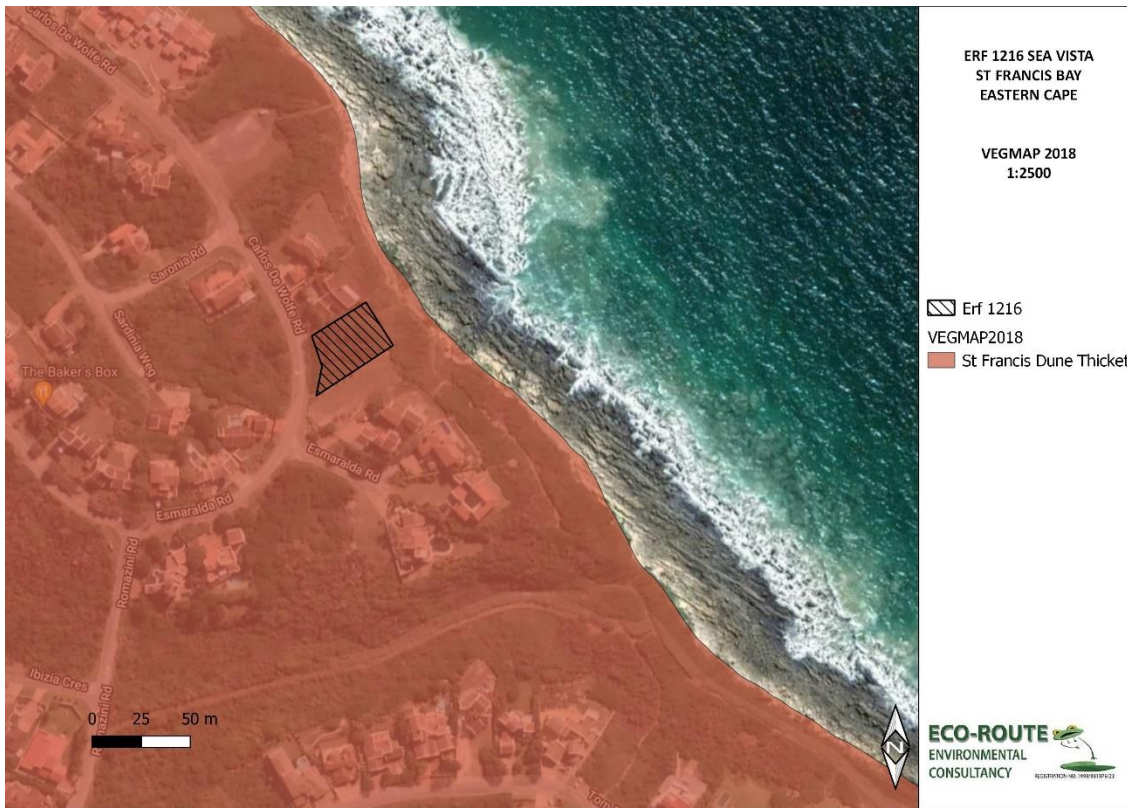


Figure 3: VegMap 2018 - St Francis Dune Thicket.

VEGMAP (SANBI 2012) identified the vegetation type as Algoa Dune Strandveld (AZs 1), which is described as follows:

Distribution Eastern Cape Province: Narrow coastal strip along the Indian Ocean seaboard from the mouth of the Tsitsikamma River to the Sundays River mouth.

Vegetation & Landscape Features Tall (up to 5 m) dense thickets on dunes mainly outside the influence of salt spray, dominated by stunted trees, shrubs (often armed with spines and thorns), abundant lianas and sparse herbaceous and grassy undergrowth.

Geology, Soils & Hydrology Aeolian dune sands of the Schelm Hoek Formation of the Algoa Group.

Climate Nonseasonal precipitation regime, with MAP approximately 680 mm, of which about 300 mm falls in summer (October–March) and 350 mm in winter (April–September). The mean daily maximum and minimum temperatures are 25.1°C and 8.3°C for February and July, respectively. See also climate diagram for AZs 1 Algoa Dune Strandveld (Figure 14.3).

Important Taxa (^SStunted shrubby forms of trees) Succulent Tree: *Aloe africana* (d). Succulent Shrubs: *Cotyledon velutina*, *Lycium cinereum*, *Zygophyllum morgsana*. Tall Shrubs: *Azima tetracantha* (d), *Brachylaena discolor*^S (d), *Chrysanthemoides monilifera* (d), *Cussonia thyrsoflora*^S (d), *Euclea racemosa* subsp. *racemosa*^S (d), *Maytenus procumbens* (d), *Mystroxydon aethiopicum*^S (d), *Pterocelastrus tricuspidatus*^S (d), *Rhus crenata* (d), *Schotia afra* var. *afra*^S (d), *Scutia myrtina*^S (d), *Sideroxylon inerme*^S (d), *Tarchonanthus littoralis*^S (d), *Canthium spinosum*^S, *Cassine peragua*^S, *Dovyalis rotundifolia*^S, *Euclea natalensis*^S, *E. racemosa* subsp. *macrophylla*, *Grewia occidentalis*, *Gymnosporia buxifolia*, *G. capitata*, *Nylandtia spinosa*, *Olea exasperata*, *Putterlickia pyracantha*, *Rhus glauca*, *R. pterota*, *Zanthoxylum capense*^S. Low Shrubs: *Carissa bispinosa* (d), *Dimorphotheca fruticosa*, *Pelargonium suburbanum* subsp. *suburbanum*, *Robsonodendron maritimum*. Succulent Woody Climber: *Sarcostemma viminalis*. Woody Climbers: *Rhoicissus digitata* (d), *Asparagus retrofractus*, *Solanum africanum*. Herbaceous Climbers: *Cynanchum natalitium* (d), *C. ellipticum*, *C. obtusifolium*, *Secamone alpini*. Succulent Herb: *Sansevieria hyacinthoides*. Graminoids: *Brachiaria chusqueoides* (d), *Panicum deustum*.

Endemic Taxa Succulent Shrub: *Cotyledon adscendens*. Tall Shrubs: *Gymnosporia elliptica*, *Rapanea gilliana*. Herb: *Lobelia zwartkopensis*. Geophytic Herb: *Brunsvigia littoralis*.

Conservation Least threatened. Target 20%. About 4% statutorily conserved in the Greater Addo Elephant National Park, Cape Recife, Sardinia Bay, The Island, Kromme River Mouth, Gamtoos River Mouth, Huisklip, Cape St Francis and Seal Point Nature Reserves as well as in the private Upe and Rebelsrus Nature Reserves, Thyspunt Natural Heritage Site and in the Seaview Game Park. More than 10% already transformed for cultivation, urban development and road building. Some of the dune systems suffer heavy infestation by *Acacia cyclops* and *A. saligna*, which are now being removed by the local Working for Water activities. Erosion very low (63%) and moderate (10%).

Remarks The structure and dynamics of this vegetation unit are similar to those of the thickets of FS 9 Groot Brak Dune Strandveld (). However, the present unit differs from the latter in having a richer assemblage of woody species. It is somewhat surprising that forest vegetation is not dominant in this seemingly suitable climatic regime. This is probably because the substrate consists of aeolian quaternary sands, salt-laden winds are prevalent in this region and because fires may periodically occur here (Vlok & Euston-Brown 2002).





References Taylor & Morris (1981), Olivier (1983), Cowling (1984), Cowling & Pierce (1985), Taylor & Boucher (1993), Vlok & Euston-Brown (2002), Vlok et al. (2003).

Even though some indigenous vegetation has re-established on Erf 1216 following clearing, no Species of Conservation Concern (SCC) was recorded during the field survey for the Terrestrial Biodiversity and Plant Species study, and no SCC was recorded in any of the reference vegetation (Table 1). Recent botanical surveys in similar habitat of the surrounding area (Grobler, 2022a, 2022b) also showed that plant SCC are unlikely to occur there. As per the Terrestrial Biodiversity and Plant Species Compliance Statement, due to the high sampling effort of the field survey, it can be stated

with high confidence that the site is unlikely to have hosted SCC populations before clearing took place².

While no plant SCC were recorded during the Terrestrial Biodiversity and Plant Species study, three species protected under the Cape Environmental and Nature Conservation Ordinance (1974) and the National Forests Act (1998) occur on site: the geophyte *Chasmanthe aethiopica*, the climber *Cynanchum obtusifolium* and the shrub *Sideroxylon inerme*. All protected species occurred at low abundances, with only one or two individuals of each species recorded on site. Three alien invasive plant species, listed in terms of the Conservation of Agricultural Resources Act (1983) and National Environmental Management: Biodiversity Act (2004), were recorded on site, namely *Acacia cyclops*, *Cestrum laevigatum* and *Ricinus communis*.

Table 1: Descriptions of current habitats on Erf 1216 (S1) and reference vegetation in the surrounding area of Sea Vista (S2–S4). Taken from the Terrestrial Biodiversity and Plant Species Compliance Statement.

Representative site	Habitat	Likelihood of SCC	Photos
S1 -34.176528° 24.840655°	Recently cleared dune thicket with scattered resprouting shrubs (<i>Searsia crenata</i> , <i>Searsia glauca</i>), weedy reseeding shrubs (<i>Osteospermum moniliferum</i>), and grass (<i>Panicum maximum</i>).	Low	
S2 -34.176657° 24.840293°	Low dune thicket dominated by <i>Osteospermum moniliferum</i> and <i>Searsia glauca</i> . Some <i>Acacia cyclops</i> present.	Low	
S3 -34.174065° 24.837791°	Low dune thicket dominated by <i>Osteospermum moniliferum</i> and <i>Searsia glauca</i> , scattered dune fynbos shrubs (<i>Metalasia muricata</i> , <i>Passerina rigida</i>) present.	Low	
S4 -34.176063° 24.838923°	Low dune thicket dominated by <i>Osteospermum moniliferum</i> and <i>Searsia glauca</i> , <i>Acacia cyclops</i> locally abundant.	Low	

² Terrestrial Biodiversity and Plant Species Compliance Statement: Erf 1216 Sea Vista, St Francis Bay, Kouga Municipality, Eastern Cape by Dr B. Adriaan Grobler dated 31 January 2023.

Due to the historical clearance of vegetation and associated disturbance to topsoils and the low likelihood of plant SCC occurring here, the site is of LOW sensitivity for terrestrial biodiversity and LOW sensitivity for plant species, and the clearing of vegetation likely had NO impact on threatened terrestrial biodiversity or plant SCC. Furthermore, the compliance statement is not subjected to any conditions³.

The Terrestrial Animal Species Assessment identified five SCC that could have occurred on site before vegetation clearing occurred (Table 2). However, for all the identified SCC, probability of occurrence is expected to be low, which reduces the sensitivity of the site for SCC to low. The low probability of occurrence reflects the low suitability of the habitat (i.e., fragmented and transformed Dune Thicket) at the site. The results indicate that animal habitats in the project area were fragmented and transformed before the unauthorised activities occurred, which reduced the suitability of the site for indigenous animal species (amphibians, reptiles, mammals, and birds) and particularly species of conservation concern. No sensitive animal habitats would have occurred in the past. This means that the present unauthorised clearing of vegetation has not affected any important animal habitats or animal communities⁴.

The project area is not located in any of South Africa's Important Bird and Biodiversity Areas (Marnewick et al. 2015).

Table 2: Animal species of conservation concern that could have occurred in the project area before vegetation clearing occurred. Included is the expected probability of occurrence of each animal species.

Species	Common name	Conservation concern	Probability of occurrence
Reptiles			
<i>Acontias lineicauda</i>	Algoa legless skink	Endemic (EC)	Low
<i>Acontias orientalis</i>	Eastern Cape legless	Endemic (EC)	Low
<i>Scelotes anguineus</i>	Algoa dwarf burrowing	Endemic (EC)	Low
Mammals			
<i>Aonyx capensis</i>	African clawless otter	Global & SA Red List: Near Threatened	Low
Birds			
<i>Campethera notata</i>	Knysna woodpecker	Global & SA Red List: Near Threatened	Low

³ Terrestrial Biodiversity and Plant Species Compliance Statement: Erf 1216 Sea Vista, St Francis Bay, Kouga Municipality, Eastern Cape by Dr B. Adriaan Grobler dated 31 January 2023.

⁴ TERRESTRIAL ANIMAL SPECIES ASSESSMENT SECTION 24G RECTIFICATION PROCESS FOR THE CLEARING OF VEGETATION ON ERF 1216 IN ST FRANCIS BAY, KOUGA MUNICIPALITY, EASTERN CAPE by Dr Marietjie Landman dated February 2023.

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

Activity	Impact summary	Significance	Proposed mitigation
Construction Phase	Direct Impacts		
	Site clearing (retrospective)	Low-Medium	<ul style="list-style-type: none"> - Disturbance to intact vegetation must be restricted by demarcating those areas that will be cleared during construction, including lay-down and stockpile areas. - Lay-down areas should be contained within the planned clearance areas and should not be placed in the surrounding intact vegetation. - All construction personnel active on site must be notified of the importance of avoiding disturbance to intact vegetation outside of demarcated clearance areas. - Permits for the destruction of protected plant species must be obtained from the relevant authorities. - Any AIP material removed during clearing of the development footprints must be removed from the site and destroyed so that reestablishment on site is avoided.
	Disturbance / removal of topsoil	Low - Medium	<ul style="list-style-type: none"> - The stockpiling of topsoil for use in rehabilitation is required. - Stockpiles must not exceed 1.5m in height, must be covered with shade cloth or similar, to prevent erosion and any invasive alien species

Activity	Impact summary	Significance	Proposed mitigation
			that begin to grow within it must be removed.
	Disturbance to wildlife	Low - Medium	<ul style="list-style-type: none"> - The development site must be barricaded with shade cloth. - If any animals are encountered on site they should be relocated to undisturbed areas. - No animals may be caught, trapped, killed, injured or hunted
	Incorrect disposal / storage of waste materials	Low	<ul style="list-style-type: none"> - Provide designated sites for rest periods, rubbish disposal, and ablutions. - Adequate toilet facilities must be provided. - All workers on site must be briefed that the riparian buffer zone is a No-Go area to prevent trampling of vegetation and wearing of paths which could increase alien plant encroachment and erosion risk. - Adequate refuse bins and skips must be provided and emptied weekly. - Demarcate areas for different waste groups. - Hazardous waste must be sealed within closed containers, protected from the natural elements and correctly disposed of at a registered hazardous waste disposal site. - All hazardous chemicals stored on-site must have relevant MSDs.
Incorrect storage of sewage	Low - Medium	<ul style="list-style-type: none"> - Temporary toilets must be provided at a ratio of 1:15. - All temporary toilets must be serviced on a weekly basis by a professional sewage disposal company. 	

Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> - The servicing of the toilets must be monitored so as to ensure that sewage does not spill out of the temporary chemical toilets.
	Noise pollution	Low - Medium	<ul style="list-style-type: none"> - Construction activities must only take place during normal working times between 08:00-17:00 on weekdays.
Indirect Impacts:			
	Stormwater management	Low	<ul style="list-style-type: none"> - Runoff from any areas should be managed to prevent soil erosion. - Disturbance to intact vegetation must be restricted by demarcating those areas that will be cleared during construction, including lay-down and stockpile areas, personnel rest areas and site offices. - Wind erosion should be limited by using mesh netting set up around any cleared footprints as soon as clearing has taken place - Stormwater runoff must be directed into channels during the earthworks phase in a controlled manner that does not cause erosion. The use of temporary erosion control measures such as sandbags should be used where necessary. - All temporary erosion and sediment control measures must be monitored for the duration of the construction phase

Activity	Impact summary	Significance	Proposed mitigation
			<p>and repaired immediately when damaged.</p> <ul style="list-style-type: none"> - No overburden or rubble should be allowed to spill downslope into the Public Place. This can be achieved by setting up netting at the top of the slope.
	Pollution of water resources and soil	Low - Medium	<ul style="list-style-type: none"> - Do not hose spills into the natural environment. - Hazardous waste must not be emptied into the sea or onto the soil. - Waste must be stored in closed containers and transported to the nearest registered landfill site regularly.
	Visual Pollution	Low - Medium	<ul style="list-style-type: none"> - Due to the proposed dwelling being surrounded by already existing dwellings, there is little to be done to mitigate against visual pollution; however, shade cloth can be used to create a site boundary. - The site must remain neat and tidy at all times.
	Scavenging by animals	Low	<ul style="list-style-type: none"> - Adequate refuse bins and skips must be provided and emptied weekly or more frequently if required. - All refuse bins are to be covered at all times.
	Increased dust levels	Low – Medium	<ul style="list-style-type: none"> - If necessary, the use of rain water may be used for site watering.
	Fire management	Low	<ul style="list-style-type: none"> - No open fires must be allowed on site.
	Poaching	Medium	<ul style="list-style-type: none"> - Construction workers must be notified of the prohibition of poaching plants and a fine system implemented.

Activity	Impact summary	Significance	Proposed mitigation
			<ul style="list-style-type: none"> - This must also be included in the site induction for personnel.
Cumulative impacts:			
	Loss of indigenous species and species diversity including protected/threatened species	Low	<ul style="list-style-type: none"> - In accordance with the ENCO, a permit for the destruction of specimens of <i>C. obtusifolium</i> and <i>M. aitonis</i> must be procured from the Province of the Eastern Cape: Department of Economic Development, Environmental Affairs and Tourism before construction commences. - No formal gardening in areas not to be developed. - Rehabilitate disturbed areas where vegetation was removed using plant species endemic to the area / coastal thicket. - The approved development footprint should be clearly demarcated prior to any construction personnel, machinery or vehicles entering the site, and no clearing should be permitted outside of this area. - Lay-down and stockpile areas should be contained within the planned clearance area and should not be placed in the surrounding intact vegetation. - All construction personnel active on site must be notified of the importance of avoiding disturbance to intact vegetation outside of demarcated clearance areas.

Activity	Impact summary	Significance	Proposed mitigation
	Ecological Connectivity	Medium	<ul style="list-style-type: none"> - Clearing of vegetation must be restricted to approved development footprints. - Existing major roads should be used as transport corridors to and from the site. - The construction of the dwelling on stilts will further serve to mitigate this impact.
	Pollution /contamination of the surrounding environment due to incorrect storage of waste materials	Low	<ul style="list-style-type: none"> - Adequate refuse bins and skips must be provided and emptied weekly. - Hazardous waste must be sealed within closed containers, protected from the natural elements and correctly disposed of at a registered hazardous waste disposal site.
	Pollution /contamination of the surrounding environment due to incorrect storage of sewage	Low - Medium	<ul style="list-style-type: none"> - All temporary toilets must be serviced on a weekly basis by a professional sewage disposal company. - The servicing of the toilets must be monitored so as to ensure that sewage does not spill out of the temporary chemical toilets.
	Empowerment of the local community members living in the area relating to temporary employment opportunities	Low	<ul style="list-style-type: none"> - Use existing social structures and communication channels to ensure social representation.

Operational Phase

Activity	Impact summary	Significance	Proposed mitigation
Operational Phase	Direct Impacts		
	Formal gardens	Medium	<ul style="list-style-type: none"> - Only vegetation indigenous to the area may be used for rehabilitation. - No manicured gardens must be created.
	Spread of Alien Invasive species	Low	<ul style="list-style-type: none"> - In accordance with the National Environmental Management: Biodiversity Act (2004) (NEMBA), the Category 1b alien invasive plants <i>A. cyclops</i> and <i>C. laevigatum</i> must be eradicated from the site and a plan for their ongoing control should be included in the environmental management plan of the development. Similar action is recommended for the Category 2 invader <i>R. communis</i>. - Management of AIPs must form part of continuous maintenance of the property. - Follow-up clearing for AIPs within the intact vegetation should take place on a yearly basis. - Due to the proximity to a watercourse, chemical methods of Invasive Alien Plant removal are prohibited.
	Disturbance to fauna	Low	<ul style="list-style-type: none"> - If any animals are encountered on the property they should not be disturbed if unnecessary. If it becomes necessary, animals must be relocated to undisturbed areas. - No animals may be caught, trapped, killed, injured or hunted.
Light pollution	Medium - High	<ul style="list-style-type: none"> - Only downlights are permitted to be used on the outside of the house. - Municipal by-laws need to be adhered to. 	

Activity	Impact summary	Significance	Proposed mitigation
	Empowerment of the local community members living in the area relating to permanent employment opportunities	Low	<ul style="list-style-type: none"> - Use existing social structures and communication channels to ensure social representation.
Indirect Impacts:			
	Stormwater management - Concentrated high velocity flows from downpipes and paved areas causing erosion of the slope	Low	<ul style="list-style-type: none"> - Runoff from any areas should be managed to prevent soil erosion. - Install at least one 10000L rainwater collection tank to collect rainwater from the roof. Ensure this water is used regularly for watering or preferably integrated into the residence plumbing (e.g. for toilet flushing or showering. This creates capacity in the tank when it rains. If it is constantly full it doesn't help for reducing runoff from the property. - Install permeable paving (e.g. grass blocks) in parking areas / driveways as this encourages water infiltration instead of surface runoff. - Revegetate all bare areas of soil post-construction with indigenous vegetation found at the site. Try to minimise areas of mowed lawn as this has very poor surface runoff interception qualities. - Try to create rain gardens at the location of any downpipes in order to soak away the rain and recharge groundwater, instead of encouraging surface runoff. - All stormwater drainage measures must be correctly installed and maintained.
	Contamination of soil and groundwater	Low	<ul style="list-style-type: none"> - The conservancy tank must be emptied regularly by either the

Activity	Impact summary	Significance	Proposed mitigation
	due to not maintaining the conservancy tank		municipality or a private sewage management company. - The conservancy tank must be inspected regularly for any maintenance issues.
Cumulative impacts:			
	Destruction to neighbouring properties if stormwater is not managed.	Low	- Stormwater drains must be regularly monitored and maintained to prevent blockages.

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 Applicant), the Site Manager and the ECO; acknowledging that all parties are familiar with the requirements of the EMPr. All employees, especially the machine and equipment operators, are to be made aware of the conditions as contained in the EMPr as well as the contractual conditions relating to the environment as contained in the contract document.

4.2 Legislation

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

LEGISLATION	ADMINISTERING AUTHORITY	TYPE Permit/ license/ authorisation/comment / relevant consideration (e.g. rezoning or consent use, building plan approval)	DATE (if already obtained):
CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA. (ACT 108 OF 1996)	All State and Provincial Departments as well as Local Authorities that have been identified as relevant Competent Authorities.	Relevant Consideration	N/A
ENVIRONMENTAL CONSERVATION ACT (ACT 73 OF 1989)	Department of Economic Development, Environmental Affairs & Tourism	Relevant Consideration	N/A
NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT 107 OF 1998)	Department of Economic Development, Environmental Affairs & Tourism	Authorization	In process

NATIONAL ENVIRONMENTAL MANAGEMENT AMENDMENT ACT (ACT 62 OF 2008)	Department of Economic Development, Environmental Affairs & Tourism	Authorization	In Process
NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT (ACT NO 10 OF 2004)	Department of Economic Development, Environmental Affairs & Tourism	Relevant Consideration	N/A
NATIONAL ENVIRONMENTAL MANAGEMENT: INTEGRATED COASTAL MANAGEMENT ACT (ACT NO 24 OF 2008)	Department of Economic Development, Environmental Affairs & Tourism	Comment/ Relevant Consideration	N/A
NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS ACT (ACT 57 OF 2003)	Department of Economic Development, Environmental Affairs & Tourism, Department of Agriculture, Forestry and Fisheries	Relevant Consideration	N/A
NATIONAL WATER ACT (ACT 36 OF 1998)	Department of Water and Sanitation	Relevant Consideration	N/A
WATER SERVICES ACT (ACT 108 OF 1997)	Department of Water and Sanitation	Relevant Consideration	N/A
SEA SHORE ACT (ACT 21 OF 1935)	Department of Economic Development, Environmental Affairs & Tourism	Relevant Consideration	N/A

CONSERVATION OF AGRICULTURAL RESOURCES ACT (ACT 43 OF 1983)	Department of Agriculture, Forestry and Fisheries	Relevant Consideration	N/A
NATIONAL HERITAGE RESOURCES ACT (ACT 25 OF 1999)	Eastern Cape Provincial Heritage Resources Authority	Comment/ Relevant Consideration	N/A

4.3 Project Responsibilities

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

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

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

- ❖ Copy of the EMPr;
- ❖ Copy of the EA;
- ❖ Copy of all other licences/permits;
- ❖ Environmental Method Statements;
- ❖ Non-conformance Reports;
- ❖ Environmental register, which shall include:
 - Communications Register – including records of complaints, minutes and attendance registers of all environmental meetings;
 - Monitoring Results – including environmental monitoring reports, register of audits, non-conformance reports; and
 - Incident book – including copies of notification of Emergencies and Incidents, this must be accompanied by a photographic record.
- ❖ Waste Documentation such as, but not necessarily limited to: Waste Manifest Documents;
- ❖ Material Safety Data Sheets (MSDSs) for any hazardous substances; and
- ❖ Written Corrective Action Instructions.

5.2 Environmental Register

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

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

5.3 Non-Conformance Report

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

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

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

5.4 Environmental Emergency Response

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

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

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

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

6.3 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 (DEDEAT).

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

6.4 Non-Compliance

Definition

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

- ❖ Any deviation by the Applicant from the environmental conditions and requirements as set out in the EA and EMPr - or;

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

Types of non-compliances issued

Two types of non-compliances may be issued:

A. Stop Works Non-Compliance

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

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

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

B. General Non-Compliance

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

6.5 Issuing a Non-Compliance

Non-compliance may be issued to:

- ❖ The Applicant
- ❖ Any representative of the Applicant

6.6 Process of Issuing Non-Compliance

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

6.7 Failure to complete corrective actions

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

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

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

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

- ❖ Within the boundaries of the site and site extensions there is evidence of contravention of clauses;
- ❖ Environmental damage occurs due to negligence; inappropriate actions taken by the Applicant or any of his staff.

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

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

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

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

6.8 Unlawful Activity/ies

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

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

7. AMENDMENTS TO THE EMPr

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

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

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.

TABLE OF RESPONSIBLE PARTIES BELOW:

Responsibility	Name of Responsible Party
Applicant	Birdman Investments (Pty) Limited
Environmental Control Officer/ ECO	(To be appointed)
Site Manager	(To be appointed)

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 Applicant.	Applicant	Once-off
Appointment of Environmental Control Officer	Appointment of Environmental Control Officer		
	An Independent ECO must be appointed at the Applicant's cost to monitor the implementation of the EMPr.	Applicant & ECO	Once-off
	The nomination of the ECO must be given to DEDEAT, 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 DEDEAT, within fourteen (14) days of appointing the new ECO. The notification must include contact details for the ECO, details pertaining to the ECO's relevant experience and reasons for the change in ECO.	As required		
Preparation of Method Statements	Method Statements		
	Method Statements must be submitted by the Applicant to the ECO and must be adhered to by the Applicant. These relate to water and stormwater management requirements, solid waste management requirements, the storage of hazardous materials (if applicable), and standard emergency procedures.	Applicant	Once-off
	The ECO will monitor the implementation of the Statements.	ECO	On-going

Activity	Management / Mitigation	Responsibility	Frequency / Timing
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.	Applicant	Once-off
Education of Site Staff on General and Environmental Conduct <i>A general regard for the social and ecological wellbeing of the site and adjacent areas is expected of the site staff.</i>	Environmental Awareness and Training		
	Operational 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.		
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: <ul style="list-style-type: none"> ➤ 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 		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	<ul style="list-style-type: none"> ➤ The mitigation measures required to be implemented when carrying out their work activities. 		
	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 sensitised to any potential hazards associated with their tasks.	Applicant	During staff induction, followed by on-going monitoring
	Translators are to be used where necessary during staff training.	ECO	
	The ECO must be on hand to explain more difficult / technical issues and to answer questions which may be raised.	ECO	
	Staff must be made aware that they are not to make excessive noise e.g. shouting, hooting.	ECO & Applicant	
	All employees must undergo the necessary safety training and wear the necessary protective clothing at all times.		
	No alcohol / drugs to be present on site; no vehicles or machinery are to be operated whilst under the influence of alcohol or drugs.		
	No firearms allowed on site or in vehicles transporting staff to / from the site (unless used by security personnel).		
	No unsocial behaviour will be permitted.		
	Bringing pets onto site is forbidden.		
	Staff must make use of facilities provided for them, as opposed to ad-hoc alternatives (e.g. fires for cooking, the use of surrounding bush as a toilet facility is strictly forbidden).		
	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		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	The staff conduct rules are described in a separate table of rules in the EMP. 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
	Site Management		
	Adequate drainage and erosion protection must be provided around the site and where necessary.	Site Manager	On-going for duration of the construction phase
	Access points and other cleared surfaces must be dampened whenever necessary and especially in dry and windy conditions to avoid excessive dust. Alternatively, a binding product such as Dustex (supplied by Patch Industrial Supplies) could be used.		
Site Clearance	Intact vegetation and re-established vegetation outside of the disturbance area must be demarcated before works commence and strictly avoided. Permits for the destruction of protected plant species must be obtained from the relevant authorities where necessary.	Site Manager	On-going for duration of the construction phase
	Disturbance of vegetation must be avoided as far as possible.		
	All construction personnel active on site must be notified of the importance of avoiding disturbance to remaining vegetation outside of demarcated clearance areas.		
Sewage and Sanitation	Ablutions		
	Toilets facilities, which must comply with local authority regulations, must be maintained in a clean and hygienic condition. Their use shall be strictly enforced. They must be positioned in an appropriate place, also taking into consideration, gradient of the land.	Site Manager	Immediately & on-going
	The Site Manager must ensure that toilets are cleaned regularly.		On-going for duration of the
Unauthorised spilling of waste from the septic tank into the environment and burying of waste are strictly prohibited.			

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	Ablution facilities must not cause any pollution to any water resource and it must not be a health hazard to the general public.		construction phase
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 number on which they may contact the Applicant/ Site Manager.	Site Manager	On-going for duration of the construction phase
	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, distances to water bodies, general on-site topography and water erosion potential of the soil. Impervious surfaces, bunded areas or drip trays must be provided where necessary.	Site Manager	On-going for duration of the construction phase
	Lay-down areas must be identified within the planned clearance areas or existing lawns and must not be placed in the surrounding intact vegetation. Material and fuel stockpile and laydown areas must be located to the western portion of the erf, placed on impermeable material (geotextile or plastic) and bunded with sandbags to prevent loss during rainfall.		
Equipment lay-down and storage areas must be designated, demarcated and signed.			
Conservation of the Natural Environment	Erosion and Stormwater Control		
	Soil disturbance during the removal of alien invasive plants must be minimised as much as possible.	Site Manager	Throughout the duration of the project
	Storm water control must be undertaken to prevent soil loss from the site.		Immediately
Erosion prevention and control measures must be implemented. This may be by the use of mulch bags, sandbags, or silt fences.	On-going for duration of the		

Activity	Management / Mitigation	Responsibility	Frequency / Timing	
	Provision shall be made for storm water management measures that will ensure effective run-off control and prevent erosion at run-off points.		construction phase	
	Continuous monitoring for evidence of erosion must be undertaken around 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 operational practices. These areas are to be recognised as "no-go" areas.	ECO & Site Manager	Immediately	
	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.		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.	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.				
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.				

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	<p>Solid waste must be managed and separated into recyclable and non-recyclable and disposed of accordingly.</p> <p>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).</p>		
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
	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		
	<p>No structures older than sixty years or parts thereof are allowed to be demolished altered or extended without a permit from Eastern Cape Heritage Resources.</p> <p>If any archaeological sites/materials are exposed, mitigation regarding the finds must be conducted under supervision of a suitably qualified specialist.</p>	Site Manager	Immediate and On-going

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	<p>In the case of the removal of such material, an archaeologist must apply for a permit from the Eastern Cape Provincial Heritage Resources Authority to scientifically excavate/collect the material.</p> <p>All costs must be financed by the applicant. This may include:</p> <p>All monitoring and mitigation expenses regarding the excavations/collecting of material, travel, accommodation and subsistence, analysis of the material, radiocarbon date(s) of the site(s) and a one-off curation/storage fee payable to the Department of Archaeology at the Albany Museum in Grahamstown (Eastern Cape Repository for Archaeological material).</p>		
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.		

9.2. OPERATIONAL PHASE

Activity	Management / Mitigation	Responsibility	Frequency / Timing
Vegetation Rehabilitation	Vegetation	Site Manager & ECO	On-going site maintenance
	A 100% indigenous planting plan must be adhered to in terms of all planting carried out on the site.		
	Erosion prevention and control measures must be fully implemented.		
	Rehabilitation must be done in accordance with the rehabilitation plan (Section 11) and monitored until vegetation has successfully established.		
Invasive Alien Plant Management (AIP)	Spread of Alien Invasive species	Site Manager	On-going site maintenance
	In accordance with the National Environmental Management: Biodiversity Act (2004) (NEMBA), the Category 1b alien invasive plants <i>A. cyclops</i> and <i>C. laevigatum</i> must be eradicated from the site and a plan for their ongoing control should be included in the environmental management plan of the development. Similar action is recommended for the Category 2 invader <i>R. communis</i> .		
	In terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), Alien and Invasive Species Regulations, 2014, specific alien plant species are prohibited and should be removed, without the use of heavy machinery and without disturbing the topsoil. The owner is to ensure that they comply with the relevant legislation.		
	Follow-up clearing for AIPs within the intact vegetation should take place on a yearly basis.		
Stormwater Management	Stormwater	Site Manager	On-going site maintenance
	Any negative stormwater effects, related to the operational phase, must be remediated.		
	All stormwater runoff within the development area must be managed in a manner as to minimise or prevent erosion (where possible). These measures		

Activity	Management / Mitigation	Responsibility	Frequency / Timing
	<p>include ensuring all stormwater outlets have diffuse flow, multiple if steep or frequent, and permeable pavements areas, rainwater harvesting from roofs.</p> <p>On-going monitoring and assessing of stormwater drainage must occur on site during the operational phase of the proposed project.</p>		

10. 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

- Timely 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 Of 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.

10.2 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 composted. 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. VEGETATION REHABILITATION PLAN

Restoration of secondary ecosystems and securing their biodiversity involves protecting the relatively undisturbed vegetation that remains as well as trying to restore what has been lost, ideally to a condition that prevailed before disturbance.

Rainfall is an important consideration for rehabilitation management as the higher and more reliable the rainfall, the greater the opportunity for vegetative growth to occur and for re-vegetation to succeed. Again, changes over time need to be taken into account, as prolonged periods of less than average rainfall are common and additional watering of newly established plants may be required. Prolonged periods of drought leave vegetation more susceptible to fire.

Pioneer species will also be established on the site because they are hardy, have a high reproduction rate, change the environment by promoting the weathering of rocks, stabilize the soil, add to the organic material in the soil, which in turn will increase the moisture retention capacity, but also improve the nutrient content of the soil. Later on, plants that have traits enabling them to become established on previously modified environments replace them.

Weed control needs to be implemented and areas should be checked on a regular basis to ensure that the re-vegetation of natural indigenous species occurs.

11.1 Objectives of Rehabilitation

Rehabilitation can be defined as the process of restoring an area back to its original state following disruption or damage to the area. The process will entail the re-vegetation of open areas, where natural vegetation was destroyed. The rehabilitation will follow the process of Ecological Succession to ensure the rehabilitation is successful.

Ecological succession can be defined as either primary or secondary succession. Primary succession is the initial establishment and development of an ecosystem where one did not exist. Secondary Succession is the re-establishment of an ecosystem following disturbance. In secondary succession, there are remnants of a previous biological community, including such things as organic matter and seeds. [Botkin, D. & Keller, E. (2007)]

The overall objective for the rehabilitation is to restore the disturbed area to its natural state.

The Rehabilitation Plan addresses the following:

- Site preparation and slope stabilisation.
- Revegetation methods for the disturbed area.
- Seed requirements and harvesting methods.
- Topsoil, mulch, fertiliser and soil stabiliser requirements and application.
- Procurement requirements and a list of species of plants to be procured.
- Vegetation establishment and maintenance requirements (irrigation, etc.), and the

- use of any herbicides, if required.
- Stormwater management and prevention of soil erosion.

11.2. Site Preparation and Slope Stabilisation

Areas where vegetation has been disturbed needs to be rehabilitated using the plant list provide below, or other species recommended by a botanical specialist. Alien vegetation present on site needs to be controlled and removed. New seedlings need to be eradicated when observed. The removal and control of alien vegetation is an ongoing process and will need to be monitored on a continuous basis.

The following is required prior to revegetation:

- The Applicant shall ensure that the areas for rehabilitation are clear of any building materials and other foreign debris.
- All visible weeds shall be removed from the area before replacing topsoil.
- Compacted soil shall be ripped along the contour, and topsoil spread evenly over the surface.
- The site must be stabilised where necessary using available materials, where possible. It is recommended that exposed soils are covered with wood chips, and tree branches used to create berms. Any cut alien vegetation on site can be utilised for this purpose if it is without seed. These mitigation measures aim at reducing soil erosion which may compromise rehabilitation efforts.
- Topsoil/compost shall be used on the bare surfaces to improve soil quality. This topsoil should be sourced from the topsoil removed for the dwelling.

11.3. Vegetation Establishment

After preparing the soil, re-vegetation must commence in order to help bind the soil and prevent soil erosion and to inhibit Invasive Alien Plants establishment which will compete with the natural vegetation for space, light, nutrients and water. In this regard, the following is to be implemented:

11.3.1. Seed requirements and harvesting methods

- Grass seeds such as teff shall be spread around the area as an initial soil stabilizer.
- Indigenous seed shall be harvested from areas that are free of alien vegetation, either within construction areas or from suitable neighbouring areas with the consent of the relevant landowners.
- Seed can be gathered by vacuum harvester or other approved mass collection method.
- Following harvesting, seeds can either be stored for later use or spread on site. This may be dependent on weather, rainfall, or season.
- Stored seed shall be dried under cool airy conditions. Seed shall be free of insects and shall be stored in suitable containers under cool conditions that are free of rodents or insects.
- Only if the harvested seed quantities are not sufficient may additional seed be bought.
- Any procurement of seed for use in re-vegetation shall be from reputable sources only.

11.3.2. Establishment of shrubs and trees

- Species commonly found in dune thicket such *Searsia glauca*, *Osteospermum moniliferum*, *Metalasia muricata*, *Passerina rigida*, and *Searsia crenata* can be planted.
- Vegetation associated with St Francis Dune Thicket / Algoa Dune Strandveld (plant list below) can be planted.
- The handling, maintenance and planting of seedlings / shrubs / trees shall be undertaken by the Applicant.
- The Applicant shall ensure that each specimen is handled and packed in the approved manner for that species or variety, and that all necessary precautions are taken to ensure that the plants arrive on site in a proper condition for successful growth.
- Plants shall be protected from wind during transportation.
- No plants or plants with exposed roots shall be subjected to prolonged exposure to drying winds and sun or subjected to water logging or force feeding at any time after purchase.
- The Applicant shall ensure that the plants are in a good condition and free from plant diseases and pests and shall immediately remove plants containing any diseases and/or pests from site.
- All plants supplied to the site must be healthy, well formed, and well rooted. Roots shall not show any evidence of having been restricted or deformed at any time.
- The potting materials used shall be weed free.
- There shall be sufficient topsoil around each plant to prevent desiccation of the root system.
- Trees or shrubs that die or become diseased so that they appear to be in a badly impaired condition shall be promptly removed and replaced as soon as possible.
- Trees shall be kept free from dead wood, broken branches, etc.

11.3.3. Mulch

- Mulch shall be used in all areas where re-vegetation has to take place and be sources from site as far as possible without compromising natural areas. Mulch brought on to site must be free of alien vegetation and seeds.
- Every effort shall be taken to ensure the retention of as much seed as possible in mulch made from indigenous vegetation, and mulches shall be collected in such a manner that the loss of seed is restricted.
- Bush-cut mulch shall be stored for as short a time-period as possible, and seed released from stockpiles shall be collected for use in re-vegetation.
- Compost from a local source may be used as mulch during re-vegetation but must be approved by the ECO.
- Compost shall be well decayed, friable and free from weed seeds.
- Seed free, half-composted material, such as mulled-bark, may be used as an additive to extend indigenous mulch. No more than 50% compost shall be used under these circumstances.
- Wood chips (including bark) which are half composted and have not been treated with preservatives can also be used as mulch during re-vegetation.
- Wood chips shall be no bigger than 50 mm in length or breadth and the ECO shall

approve the source of the chips.

- Removed alien plant material shall be reduced by either mechanical means (chipper) or by hand-axing to pieces no longer than 100mm.

11.3.4. Fertilizer

- The use, storage and handling of fertiliser shall be strictly controlled.
- Fertilisers shall be suitably stored in sealed containers in areas approved by the ECO.
- Care shall be taken when using fertilisers near sensitive natural areas.
- Soil shall be well watered and moist before any fertiliser is applied.
- It would be preferred for fertilizers not to be used on the site at all, and only if necessary.

11.3.5. Irrigation

- The Applicant shall be responsible for maintaining the desired level of irrigation necessary to maintain vigorous and healthy growth.
- Water used for the irrigation of re-vegetated areas shall be free of chlorine and other pollutants that will have a detrimental effect on the plants.
- Every effort shall be made to avoid irrigation overspray into areas with natural vegetation.
- Trees can be watered using 5L bottles as drip irrigation in order to give them the best chance to establish.
- Any shrubs and trees planted as part of the re-vegetation shall be watered three times weekly in summer, once weekly in winter, unless the Applicant makes use of irrigation method above.

11.3. Weeds, Disease and Pest Control

- The Applicant shall be responsible for ensuring that all re-vegetated areas remain free of all alien and indigenous weed species.
- Weeding, removal methods and storage of this material shall be undertaken in such a manner that prevents the re-infestation of the cleaned areas.
- All dead plant material shall be removed immediately as it may become a fire hazard.
- The Applicant shall ensure that all plants are disease and pest free. Any methods used to control any diseases and/or pests, including the use of herbicides and pesticides, must be approved by the ECO.

11.4. Stormwater Management Control and Erosion Prevention

- Measures need to be put into place to prevent rainwater runoff and erosion.
- Onion bags filled with wood chips around rehabilitation areas can be used to retain rainwater longer and prevent excessive runoff.
- Mulch shall be used over newly seeded or planted areas to slow down runoff and erosion.
- Swales can be used with the contour of the site to reduce run off and retaining water especially in warm season.
- Make use of chipped material, where possible chip material on site.
- Cut tree branches from alien vegetation removal where available can be stacked in steep

areas to help slow down runoff and accelerated erosion.

11.5. Plant List

Please consult with a Botanical specialist for a comprehensive list.

Important Taxa common to Algoa Dune Strandveld (AZs 1):

Succulent Tree: *Aloe africana* (d).

Succulent Shrubs: *Cotyledon velutina*, *Lycium cinereum*, *Zygophyllum morgsana*.

Tall Shrubs: *Azima tetracantha* (d), *Brachylaena discolor*^s (d), *Chrysanthemoides monilifera* (d), *Cussonia thyrsoflora*^s (d), *Euclea racemosa* subsp. *racemosa*^s (d), *Maytenus procumbens* (d), *Mystroxydon aethiopicum*^s (d), *Pterocelastrus tricuspidatus*^s (d), *Rhus crenata* (d), *Schotia afra* var. *afra*^s (d), *Scutia myrtina*^s (d), *Sideroxylon inerme*^s (d), *Tarchonanthus littoralis*^s (d), *Canthium spinosum*^s, *Cassine peragua*^s, *Dovyalis rotundifolia*^s, *Euclea natalensis*^s, *E. racemosa* subsp. *macrophylla*, *Grewia occidentalis*, *Gymnosporia buxifolia*, *G. capitata*, *Nylandtia spinosa*, *Olea exasperata*, *Putterlickia pyracantha*, *Rhus glauca*, *R. pterota*, *Zanthoxylum capense*^s.

Low Shrubs: *Carissa bispinosa* (d), *Dimorphotheca fruticosa*, *Pelargonium suburbanum* subsp. *suburbanum*, *Robsonodendron maritimum*.

Succulent Woody Climber: *Sarcostemma viminale*.

Woody Climbers: *Rhoicissus digitata* (d), *Asparagus retrofractus*, *Solanum africanum*.

Herbaceous Climbers: *Cynanchum natalitium* (d), *C. ellipticum*, *C. obtusifolium*, *Secamone alpini*.

Succulent Herb: *Sansevieria hyacinthoides*.

Graminoids: *Brachiaria chusqueoides* (d), *Panicum deustum*.

Endemic Taxa common to Algoa Dune Strandveld (AZs 1):

Succulent Shrub: *Cotyledon adscendens*.

Tall Shrubs: *Gymnosporia elliptica*, *Rapanea gilliana*.

Herb: *Lobelia zwartkopensis*.

Geophytic Herb: *Brunsvigia littoralis*.

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 Applicant of his responsibilities in terms of overall compliance with the EA and EMPr.

FUNCTION	RESPONSIBILITY
Applicant	<ul style="list-style-type: none"> The Applicant is ultimately responsible for the ensuring compliance with all the requirements associated with the operation, rehabilitation and decommissioning phases of the project.
Site Manager	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> The ECO is to have access to the site at all times, for the purpose of inspections to ensure that the environmental conditions of the EMPr as well as the conditions stipulated to in the EA and the recommendations made in the EIR are being implemented and adhered to. The ECO must report on the environmental aspects of the project to the responsible person/authority at agreed intervals. The need for any deviations or variations in the environmental conditions must be reported to the DEDEAT for approval prior to these being undertaken. The ECO must be fully cognisant with the contents of the Environmental Authorisation as well as this EMPr and any other applicable legislation
Competent Authority	<ul style="list-style-type: none"> The Compliance Officer appointed by the Competent Authority is responsible for the ensuring that the Applicant, Site Manager and ECO are compliant with the provisions of the EA and EMPr.

ACKNOWLEDGEMENT FORM

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

PROJECT NAME:

Rectification of unlawful clearance of indigenous vegetation and proposed construction of a residential dwelling on Erf 1216 Sea Vista, St Francis Bay, Kouga Municipality, Eastern Cape.

DEDEA REF:

APPLICANT:

Signed: Date:

SITE MANAGER:

Signed: Date:

ENVIRONMENTAL CONTROL OFFICER

Signed: Date:

Appendix A: CV of the EAP

FORM TECH-6
(CONTINUED)

CURRICULUM VITAE (CV)

Position Title and No.	Senior Environmental Assessment Practitioner
Name of Expert:	Janet Ebersohn
Date of Birth:	23/05/1977
EAPASA REG:	2019/1286
Country of Citizenship/Residence	South Africa

Education:

Institution: Tshwane University of Technology and Unisa

Year: 1998

Degree: National Diploma in Food Service Management

Institution: University of South Africa

Year: 2012

Degree: BSc. Hons in Environmental Management

Institution: Stellenbosch University

Year: 2012

Degree: Certificate on Flood Line Determination

Institution: Rhodes University

Year: 2013

Degree: Certificate on Wetland Delineation.

Employment record relevant to the assignment:

Period	Employing organization and your title/position. Contact info for references	Country	Summary of activities performed relevant to the Assignment
1998 - 2008	Various positions in Food Service Management Reference: Voughan Havenga	South Africa	Chef, Food procurement, Menu Development, Client Liaison
2008 -2010	Junior Environmental Assessment Practitioner Reference: Dr C Ebersohn / Peet Joubert	South Africa	Oscaer Permits, DAFF permits, Basic Assessment Reports
2010 -2022	Senior Environmental Assessment Practitioner Reference: Dr C Ebersohn / Danie Smit	South Africa	Social Impact Assessments, Wetland Delineation, Environmental Impact Assessments and Environmental Impact Reports pertaining to: <ul style="list-style-type: none"> • Residential Developments • Industrial Developments • Game Farm Management • Water use license

		<p>applications</p> <ul style="list-style-type: none"> • Waste management license applications • Air quality license applications • Permit applications for developments in identified sensitive areas <p>Environmental Management Programmes & Frameworks pertaining to:</p> <ul style="list-style-type: none"> • Residential Developments • Industrial Developments • Game Farm Management • Water use license applications • Waste management license applications • Air quality license applications • Permit applications for developments in identified sensitive areas <p>Environmental Assessments for the determination of:</p> <ul style="list-style-type: none"> • Coastal set back lines • Erosion set back lines • Flood line determinations • Wetland delineation • Sensitive areas set back lines <p>Integrated Environmental and Conservation Planning with Multi Spectrum Participation:</p> <ul style="list-style-type: none"> • Environmental Management Programmes and training for companies • Environmental Management Programmes and training for NGO's
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Membership in Professional Associations:

Environmental Assessment Practitioners of South Africa

Language Skills:

Languages	Speaking	Reading	Writing
English	Excellent	Excellent	Excellent
Afrikaans	Good	Good	Good

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
{List all deliverables/tasks as in TECH- 5 in which the Expert will be involved}	Ms Janet has completed various Environmental Impact Assessment Applications, Environmental Management Programmes and social impact assessment reports. She has worked on the assessment of goods and services that the wetlands provide, thereby aiding informed planning and decision making.

Expert's contact information: (e-mail : janet@ecoroute.co.za, phone : +27 082 5577122)

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience, and I am available to undertake the assignment in case of an award. 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.

Appendix C: INCEDENCE REPORTING

INCIDENT REPORT FORM		Date:	
PROJECT NAME:			
To be completed by the person reporting the incident:			
Name		Designation	
Contact number		Physical location of incident	
Describe the incident and environmental impact			
What remediation has been undertaken? (describe)			
In the opinion of the Site Operations Manager is the remediation action sufficient?			
If not, what further actions must be taken? (detail)			
Has the damage/ contamination been completely remediated?			
If not, what residual damage remains (detail the residual damage)?			
If residual damage remains - what is the reason and what is planned with respect to the environmental damage?			
Upon investigation, what was found to be the cause of the incident? (Detail)			
Is this a repeat of a similar incident?			
What is the reason that planned changes did not prevent a recurrence of the incident?			
What is to be changed to ensure that the incident will not be repeated? (Detail)			
Does the incident potentially compromise legislation?			

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⁶ Ecosense CC

Note: In the event of a significant incident which is defined in terms of section 30(1)(a) of the National Environmental Management Act as an unexpected sudden occurrence, including a major emission, fire or explosion leading to danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed, the incident shall be reported. In line with Section 30(3)(d) any steps that should be taken in order to avoid or minimise the effects of the incident on public health and the environment must be reported to-

- (i) the Director-General of the Department responsible for Environmental and / or Water Affairs;
- (ii) the South African Police Services and the relevant fire prevention service;
- (iii) the relevant provincial head of department or municipality; and
- (iv) all persons whose health may be affected by the incident

Other Comments:

Date

Signed by person completing the report.

Appendix D: COMPLAINTS REGISTER

ENVIRONMENTAL COMPLAINTS REGISTER		Date:	
PROJECT NAME			
RESPONSIBLE PERSON:		Phone number	
Company		E-mail	

Date of complaint	Contact Details of Complainant	Nature of Complaint	Actions taken to rectify including dates

⁸ Ecosense CC