

**PROPOSED DEVELOPMENT OF AGULHAS
LIGHTHOUSE PRECINCT, AGULHAS NATIONAL
PARK, WESTERN CAPE PROVINCE**

**DRAFT
ENVIRONMENTAL MANAGEMENT PLAN**

April 2009

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1. INTRODUCTION

This document describes mitigation measures and is partly prescriptive, identifying specific people to undertake specific tasks, in order to ensure that impacts on the environment are minimized during the construction- and operational and decommissioning phases of the proposed development of the Agulhas Lighthouse Precinct, Agulhas National Park, Western Cape Province.

The aim of this EMP is to integrate environmental planning, design, construction, and operational activities on the site. The EMP must form part of the contractual obligation between the Contractor and the Client.

2. PROPOSED MECHANISMS FOR MONITORING COMPLIANCE WITH THE EMP AN REPORTING THEREOF

2.1 Environmental Site Agent

The environmental site agent (ESA) is the person involved with the development project who is responsible for the implementation of the environmental management plan. This person is therefore responsible for the environmental issues involved with the construction phase of the project.

The ESA must be a person with adequate environmental knowledge to understand and implement this management plan. The ESA may not be someone appointed by the contractor, engineer or other party involved with the project. The ESA must report to the applicant only. The ESA has the authority to stop works if in his opinion there is a serious threat to or impact on the environment caused directly from the construction operations. This authority is to be limited to emergency situations where consultation with the engineer or applicant is not immediately available. In all such work stoppage situations the ESA is to inform the engineer and applicant of the reasons for the stoppage as soon as possible.

Upon failure by the contractor or his employee to show adequate consideration to the environmental aspects of this contract, the ESA may recommend to the engineer to have the contractor's representative or any employee(s) removed from the site or work suspended until the matter is remedied. No extension of time will be considered in the case of such suspensions and all costs will be borne by the contractor.

2.2 Environmental Awareness Training for Site Personnel

All contractor teams involved in work on the development are to be briefed on their obligations towards environmental controls and methodologies in terms of this EMP prior to work commencing. The briefing will usually take the form of an on site talk and demonstration by the ESA. The education / awareness program should be aimed at all levels of management within the contractor team. (See "Do's & Don'ts" summary sheet).

2.3 On Site Communication Procedure

2.3.1 Site Instruction Entries

The Site Instruction book entries will be used for the recording of general site instructions as they relate to the works on site. It will also be used for the issuing of stop work orders for the purposes of immediately halting any particular activities of the contractor in lieu of the environmental risk that they may pose.

2.3.2 ESA Diary Entries

The purpose of these entries will be to record the comments of the ESA as they relate to activities on the site. Each of these books must be available in duplicate, with copies for the Engineer and ESA. These books should be available to the authorities for inspection or on request. Contractors meeting minutes must reflect environmental queries, agreed actions and dates of eventual compliance. These minutes form part of the official environmental record.

2.3.3 Method Statements

Method statements from the Contractor will be required for specific sensitive actions on request of the authorities or ESA. A method statement forms the base line information on which sensitive area work takes place and is a "live document" in that modifications are negotiated between the Contractor and ESA / Engineer, as circumstances unfold. All method statements will form part of the EMP documentation and are subject to all terms and conditions contained within the EMP main document. A method statement describes the scope of the intended work in a step by step description in order for the ESA and Engineer to understand the Contractors intentions. This will enable them to assist in devising any mitigation measures, which would minimize environmental impact during these tasks. For each instance wherein it is requested that the Contractor submit a method statement to the satisfaction of the ESA, the format should clearly indicate the following:

- ◆ **What** - a brief description of the work to be undertaken;
- ◆ **How** - a detailed description of the process of work, methods and materials;
- ◆ **Where** - a description/sketch map of the locality of work (if applicable); and
- ◆ **When** - the sequencing of actions with due commencement dates and completion date estimates.

The Contractor must submit the method statement before any particular construction activity is due to start. Work may not commence until the method statement has been approved by the ESA.

2.3.4 Record Keeping

All records related to the implementation of this management plan (e.g. site instruction book, ESA diary, method statements) must be kept together in an office where it is safe and can be retrieved easily. These records should be kept for two years and should at any time be available for scrutiny by any relevant authorities.

2.3.5 Photographs

It is recommended that photographs are taken of the site prior to, during and immediately after construction as a visual reference. These photographs should be stored with other records related to this EMP. If captured in digital format hard copies must be kept with all other records relevant to the implementation of this EMP.

2.3.6 Environmental Completion Statement

An Environmental Completion Statement is a report by the ESA to the relevant authorities stating completion of the project and compliance with the EMP and conditions.

2.4 Basic Rules of Conduct

The following list represents the basic Do's and Don'ts towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks. These are not exhaustive and serve as a quick reference aid. NOTE: **ALL new site personnel must** attend an environmental awareness presentation. Please inform your foreman or manager if you have not attended such a presentation or contact the ESA.

DO:

- 🗑️ Use the toilet facilities provided – report dirty or full facilities
- 🗑️ Clear your work areas of litter and building rubbish at the end of each day – use the waste bins provided and ensure that litter will not blow away.

- ✚ Report all fuel or oil spills immediately & stop the spill continuing.
- ✚ Dispose of cigarettes and matches carefully. (Littering is an offence.)
- ✚ Confine work and storage of equipment to within the immediate work area.
- ✚ Use all safety equipment and comply with all safety procedures.
- ✚ Ensure a working fire extinguisher is immediately at hand if any “HOT WORK” is undertaken e.g. welding, grinding, gas cutting etc.
- ✚ Prevent excessive dust and noise.

DO NOT:

- ✚ Make any fires.
- ✚ Enter any fenced off or marked area.
- ✚ Allow cement or cement bags to blow around.
- ✚ Allow waste, litter, oils or foreign materials into the storm water channels
- ✚ Litter or leave food laying around

3. IMPACTS AND MITIGATION MEASURES IDENTIFIED

A number of potential environmental impacts that may arise during the project have been identified. These are outline in the following table below, and guidelines and mitigation are proposed. The Contractor must familiarize himself with the requirements of the EMP, keeping in mind that this EMP specifies the minimum performance specifications and that other site-specific requirements and possible additional requirements from the Department of Environment and Tourism, as outlined in the Environmental Authorization, must be complied with.

3.1 Construction Phase

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DEVELOPMENT OF THE AGULHAS LIGHTHOUSE PRECINCT, AGULHAS NATIONAL PARK, WESTERN CAPE PROVINCE								
ACTIVITY	ASPECT	IMPACT	MITIGATION MEASURE: (objective and target)	PERFORMANCE INDICATOR	RESPONSIBILITY	RESOURCES	SCHEDULE	VERIFICATION
Establish main Site Office & Storage Site	Site layout planning	Negative impact of haphazard placement of infrastructure on the environment	<p>Objective: To ensure acceptable impact & management of environmental issues at main site office and storage site during construction by proper planning of layout of infrastructure placement</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Draw up and submit for approval a Site Layout Master Plan. This plan must show the final positions and extent of all permanent and temporary site structures and infrastructure, 2) The planning for layout must be done in consultation on-site with the ESA. 	Site Layout Plan approved by the ESA	Contractor	Costs will be covered within the contract for implementation of the project	Site establishment stage	Engineering Contractor Environmental Site Agent
	Right of entry	Hazards to animals, and security of materials	<p>Objective: To secure the Contractor's camp area against unauthorized entry</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Fence or suitably secure main site office and material storage 	Site Office & Material Storage Site is secure and there is no unauthorized entry	Contractor	Costs will be covered within the contract for implementation of the project	Site establishment stage	Engineering Consultant Environmental Site Agent

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ACTIVITY	ASPECT	IMPACT	MITIGATION MEASURE: (objective and target)	PERFORMANCE INDICATOR	RESPONSIBILITY	RESOURCES	SCHEDULE	VERIFICATION
			area.					
Establish main Site Office & Storage Site	Access route	Erosion and dilapidation of the access route	<p>Objective: Prevent erosion and the dilapidation of the access road</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Proper maintenance should be done to ensure the quality of the access road, 2) Implement erosion protection works at identified problem areas. 	The access road is in a acceptable condition	Contractor	Costs will be covered within the contract for implementation of the project	Site establishment stage	Engineering Consultant Environmental Site Agent
	Topsoil	Destruction or loss of topsoil	<p>Objective: To retain topsoil for later use in closure</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Remove topsoil approximately 300 mm deep from establishment area and stockpile areas, 2) Provide containment and settlement facilities for effluents from concrete mixing and washing (concrete vehicle wash bag) facilities, 3) Provide spill containment facilities for hazardous materials like fuel 	<p>Sufficient topsoil for closure available</p> <p>No topsoil contaminated with cementitious materials, fuel or oil</p>	Contractor	Costs will be covered within the contract for implementation of the project	Site establishment stage	Continuous by Contractor's Site Engineer Environmental Site Agent

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ACTIVITY	ASPECT	IMPACT	MITIGATION MEASURE: (objective and target)	PERFORMANCE INDICATOR	RESPONSIBILITY	RESOURCES	SCHEDULE	VERIFICATION
			and oil.					
Establish main Site Office & Storage Site	Existing vegetative cover	Loss of vegetation	<p>Objective: To avoid destruction of vegetation</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Minimize extent of removal of any vegetation, 2) Do not remove any large tree without permission from the ESA, 3) Physical marking of trees and sensitive vegetation to be protected. No large trees may be removed without the permission of the ESA, 4) No open fires permitted under trees, 5) Rehabilitate denuded areas with appropriate species as per specifications. 	<p>No unnecessary loss of vegetation</p> <p>Protection of valuable vegetation as indicated and marked/fenced off by the ESA</p>	Contractor	Costs will be covered within the contract for implementation of the project	Throughout construction stage	<p>Continuous by Contractor's Site Engineer</p> <p>Environmental Site Agent</p>
Development of the Agulhas Lighthouse Precinct, Agulhas	Fauna	Disturbance to the fauna in the area	<p>Objective: To avoid disturbance to the fauna in the area.</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) No hunting, snaring, shooting, 	Protection of the fauna that may be in the area of construction	Contractor	Costs will be covered within the contract for implementation of the project	Throughout construction stage	<p>Continuous by Contractor's Site Engineer</p> <p>Environmental</p>

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ACTIVITY	ASPECT	IMPACT	MITIGATION MEASURE: (objective and target)	PERFORMANCE INDICATOR	RESPONSIBILITY	RESOURCES	SCHEDULE	VERIFICATION
National Park			nest raiding or egg collection by the construction staff should be allowed.					Site Agent
Development of the Agulhas Lighthouse Precinct, Agulhas National Park	Surface water and/or existing storm water systems	Contamination of storm water runoff with suspended solids	<p>Objective: Contain soils and materials within defined areas and prevent contamination of storm water runoff.</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Ensure that excavation areas have a predetermined stockpile area for construction materials and excavated material, 2) Disposal of waste excavated material at appropriate waste disposal sites, 3) Concrete mixing to be carried out away from sensitive areas and on impermeable surfaces, 4) Construct and operate the necessary collection facilities and storm water management systems such as diversion berms, ditches, drains, oil separation sumps, gross water ways etc. to prevent 	<p>Correct stockpiling of excavated material on site</p> <p>No pollution of water courses</p>	Contractor	Costs will be covered within the contract for implementation of the project	Throughout construction stage	<p>Continuous by Contractor's Site Engineer</p> <p>Environmental Site Agent</p>

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ACTIVITY	ASPECT	IMPACT	MITIGATION MEASURE: (objective and target)	PERFORMANCE INDICATOR	RESPONSIBILITY	RESOURCES	SCHEDULE	VERIFICATION
			contamination of any water, 5) Provide suitable and sufficient ablution facilities, 6) Do not locate any site toilet, sanitary convenience, septic tank or French drain within the 1:100 year flood line, or within a horizontal distance of 100m (whichever is greater) of a watercourse or drainage line, 7) Combine drinking water facilities with hand washing facilities near site toilet.					
Development of the Agulhas Lighthouse Precinct, Agulhas National Park	Soil Erosion	Erosion	<p>Objective: Prevent erosion of areas</p> <p>Targets:</p> 1) Ensure correct drainage of areas, 2) All the areas disturbed during construction work needs to be landscaped to a standard similar or better than before on completion of the works before replacement of topsoil, 3) The layout of the area should be	Construction site erosion free	Contractor	Costs will be covered within the contract for implementation of the project	Throughout construction phase	Continuous by Contractor's Site Engineer Environmental Site Agent

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ACTIVITY	ASPECT	IMPACT	MITIGATION MEASURE: (objective and target)	PERFORMANCE INDICATOR	RESPONSIBILITY	RESOURCES	SCHEDULE	VERIFICATION
			<p>optimized to limit the erosion potential,</p> <p>4) The design of all works shall include measures to prevent erosion resulting from concentration,</p> <p>5) Rehabilitate denuded areas especially slopes with appropriate species and erosion protection measures i.e. geotextiles, rocks: topsoil mixtures as per specifications.</p>					
Development of the Agulhas Lighthouse Precinct, Agulhas National Park	Waste Handling	Pollution of environment with waste materials	<p>Objective: To avoid pollution of environment with waste materials</p> <p>Targets:</p> <p>1) Provide adequate waste bins on-site equipped with a lid to ensure no pollution,</p> <p>2) Set up system for regular waste removal to approved waste handling facility,</p> <p>3) Minimize waste by sorting wastes into recyclable and non</p>	Appropriate management of wastes	Contractor	Costs will be covered within the contract for implementation of the project	Throughout construction stage	Continuous by Contractor's Site Engineer Environmental Site Agent

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ACTIVITY	ASPECT	IMPACT	MITIGATION MEASURE: (objective and target)	PERFORMANCE INDICATOR	RESPONSIBILITY	RESOURCES	SCHEDULE	VERIFICATION
			recyclable wastes, 4) No solid waste may be burned on site, 5) Contain chemical spills, and arrange for cleanup / control by the supplier, or by professional pollution control personnel, 6) Hazardous substances, e.g. diesel, oil, etc. required by the contractors shall be stored in dedicated areas developed to minimize spills and protect the environment. All storage areas, spillage containment areas, containers of hazardous substances and dangerous equipment shall be clearly and prominently marked as such.					
Development of the Agulhas Lighthouse Precinct, Agulhas National Park	Health and Safety	Hazardous working conditions for workers	<p>Objective: Provide adequate measures to ensure workers are not placed at undue risk.</p> <p>Targets:</p> <p>1) Ensure that PPE is available to workers,</p>	Safe working conditions for workers	Contractor	Costs will be covered within the contract for implementation of the project	Throughout construction stage	Continuous by Contractor's Site Engineer Environmental Site Agent

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ACTIVITY	ASPECT	IMPACT	MITIGATION MEASURE: (objective and target)	PERFORMANCE INDICATOR	RESPONSIBILITY	RESOURCES	SCHEDULE	VERIFICATION
			<ol style="list-style-type: none"> 2) Adhere to the Occupational Health and Safety Act, 3) Keep a first aid room stocked, 4) Issue all workers with necessary health and safety items, 5) Provide warning signs to motorists, in advance, of the working area. 					
	Air Quality	Dust nuisance from the excavated and stockpiled materials	<p>Objective: To avoid dust nuisance from excavated materials or construction materials</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Implement dust suppression measures e.g. regular watering, 2) Concrete mixing to be carried out away from sensitive areas, 3) Build a settling dam off the concrete vehicle wash. 	<p>Appropriate management of dust</p> <p>No complaints from workforce</p>	Contractor	Costs will be covered within the contract for implementation of the project	Throughout construction stage	<p>Continuous by Contractor's Site Engineer</p> <p>Environmental Site Agent</p>
Development of the Agulhas Lighthouse Precinct, Agulhas	Fire	Uncontrolled fire outbreak	<p>Objective: Provide adequate measures to ensure no fire risks.</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Establish and maintain fire 	<p>No fires as a result of Works on site: the Contractor will be held liable for any damage to property adjoining the</p>	Contractor	Costs will be covered within the contract for implementation	Throughout construction stage	<p>Continuous by Contractor's Site Engineer</p> <p>Environmental</p>

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ACTIVITY	ASPECT	IMPACT	MITIGATION MEASURE: (objective and target)	PERFORMANCE INDICATOR	RESPONSIBILITY	RESOURCES	SCHEDULE	VERIFICATION
National Park			<p>breaks around the Work Sites if as and when specified by the ESA and as required by applicable legislation and the local authority.</p> <p>2) Ensure Work Site and the contractor's camp is equipped with adequate fire fighting equipment. This includes at least rubber beaters when working in veld areas, and at least one fire extinguisher of the appropriate type irrespective of the site,</p> <p>3) No open fires are permitted anywhere on site. Restrict contained fires for heating and cooking (i.e. in a fire drum) to designated areas on site,</p> <p>4) Prevent employees from creating fires randomly outside designated areas,</p> <p>5) Do not store any fuel or chemicals under trees,</p> <p>6) Do not store gas and liquid fuel in</p>	Site as a result of any fire caused by one of his employees		of the project		Site Agent

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ACTIVITY	ASPECT	IMPACT	MITIGATION MEASURE: (objective and target)	PERFORMANCE INDICATOR	RESPONSIBILITY	RESOURCES	SCHEDULE	VERIFICATION
			the same storage area, 7) Do not permit any smoking within 3m of any fuel or chemical storage area, or refuelling area.					
Development of the Agulhas Lighthouse Precinct, Agulhas National Park	Noise	Noise nuisance from construction equipment	<p>Objective: To avoid noise nuisance from construction equipment</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Limit working hours of noisy equipment to daylight hours, 2) Fit silencers to equipment, 3) Unless otherwise specified by the ESA, normal work hours will apply (i.e. from 06:30 to 16:15, Mondays to Fridays), 4) Ensure that employees and staff conduct themselves in an acceptable manner while on site, both during work hours and after hours. 	No noise nuisance as a result of the construction equipment.	Contractor	Costs will be covered within the contract for implementation of the project	Throughout construction stage	Continuous by Contractor's Site Engineer Environmental Site Agent

3.2 Operational phase

The intention, of providing an EMP for the operational phase, is merely to provide Management with guidelines to be used in the management of the Agulhas Lighthouse precinct, to safeguard the environment against negative environmental impacts.

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DEVELOPMENT OF THE AGULHAS LIGHTHOUSE PRECINCT, AGULHAS NATIONAL PARK, WESTERN CAPE PROVINCE								
ACTIVITY	ASPECT	IMPACT	MITIGATION MEASURE: (objective and target)	PERFORMANCE INDICATOR	RESPONSIBILITY	RESOURCES	SCHEDULE	VERIFICATION
Operation of the Agulhas Lighthouse Precinct, Agulhas National Park	Surface water and/or existing storm water systems	Management of storm water systems	<p>Objective: Ensure the proper working status of all storm water channels.</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Management of all storm water systems to keep them in working condition, 2) Storm water handling to be done according to prevent erosion. 	No pollution of water courses	Applicant	Costs will be covered within the contract for operation of the project	Throughout the live span of the activity	Applicant
	Soil erosion	Erosion	<p>Objective: Prevent erosion of areas</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Ensure correct drainage of areas, 2) The layout of the area should be optimized to limit the erosion potential, 	Development site is erosion free	Applicant	Costs will be covered within the contract for operation of the project	Throughout the live span of the activity	Applicant

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DEVELOPMENT OF THE AGULHAS LIGHTHOUSE PRECINCT, AGULHAS NATIONAL PARK, WESTERN CAPE PROVINCE

ACTIVITY	ASPECT	IMPACT	MITIGATION MEASURE: (objective and target)	PERFORMANCE INDICATOR	RESPONSIBILITY	RESOURCES	SCHEDULE	VERIFICATION
			3) Rehabilitate denuded areas especially slopes with appropriate species and erosion protection measures i.e. geotextiles, rocks: topsoil mixtures as per specifications,					
Operation of the Agulhas Lighthouse Precinct, Agulhas National Park	Aesthetic view of the area	Aesthetic pollution	<p>Objective: To avoid visual pollution</p> <p>Targets:</p> <p>1) Treat man made surfaces to blend in with the surrounding landscape i.e. 1:3 slopes, usage of colouring compounds on concrete like permean,</p> <p>2) Demolition of all temporary infrastructure should be done,</p> <p>3) Ripping and landscaping of compacted areas should be done,</p> <p>4) Abide to architectural guidelines and principals prescribed in the Basic Assessment Report</p>	The aesthetic view of the area is not affected by the proposed development.	Applicant	Costs will be covered within the contract for operation of the project	Throughout the live span of the activity	Applicant

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DEVELOPMENT OF THE AGULHAS LIGHTHOUSE PRECINCT, AGULHAS NATIONAL PARK, WESTERN CAPE PROVINCE								
ACTIVITY	ASPECT	IMPACT	MITIGATION MEASURE: (objective and target)	PERFORMANCE INDICATOR	RESPONSIBILITY	RESOURCES	SCHEDULE	VERIFICATION
Operation of the Agulhas Lighthouse Precinct, Agulhas National Park	Weed and invader plant control	Deterioration of the area due to the invasion of weed and/or invader plants	<p>Objective: To avoid the invasion of problem plants</p> <p>Targets:</p> <p>1) A weed and invader control program needs to be implemented.</p>	No weed or invader plants will be present at the proposed site.	Applicant	Costs will be covered within the contract for operation of the project	Throughout the live span of the activity	Applicant

3.3 Decommissioning Phase

The objective of providing guidelines during the decommissioning phase is to prevent structures being left to deteriorate. Therefore it is imperative that non-functional structures be removed as soon as possible and the area rehabilitated to its former natural state. If non-functional structures are not needed anymore, or not removed, it must be maintained as if it is used to prevent the environmental degrading of the area. To ensure the integrity of the area, this aspect must also form part of the checklist of the annual environmental audit.

4. IDENTIFICATION OF PERSONS RESPONSIBLE FOR IMPLEMENTATION OF THE EIR AND EMP

4.1 Construction Phase

The construction contractor will:

- ✚ Be held responsible for the implementation of the EMP,
- ✚ Be responsible to have the EMP available on site at all times,
- ✚ Identify the need/extent, and be responsible for the implementation on of an environmental awareness-training program for construction staff, to be conversant with EMP content and their responsibilities before the commencement of construction,
- ✚ Be held responsible for compliance with all relevant aspects of the EMP,
- ✚ Be held responsible for all environmental issues on site, for one raining season after finishing of the construction phase to determine the effectiveness of the storm water control measures,
- ✚ Provide the applicant with a “Method Statement” which will indicate the procedures that will be applied in order to meet the requirements of any aspect of the EMP,
- ✚ Ensure that all problems identified during environmental inspections, are addressed and rectified as soon as reasonable possible,
- ✚ After ceasing of construction activities, an environmental audit should be done, by the ESA, before commencing with the operational phase, to determine compliance with the EMP. The results to be sent to DEAT in writing.

4.2 Operational Phase

During this phase the applicant, SANParks will be responsible to prevent negative environmental impacts, and as such will be responsible for:

- ✚ Providing a budget for maintenance,
- ✚ Maintaining all approved infrastructure in good working order to effectively fulfil its intended purpose and to prevent negative environmental impacts,
- ✚ Not construct any additional buildings, infrastructure, etc. contrary to the approved Environmental Authorization, without performing an environmental impact assessment to evaluate alternatives and environmental impacts,
- ✚ To immediately remedy any factors that contribute to negative environmental impacts,
- ✚ To do an annual environmental audit and to have the results in writing available at the administration offices of SANParks.

4.3 Decommissioning

The objective to provide guidelines during the decommissioning phase is to prevent structures being left to deteriorate. Therefore it is imperative that non-functional structures are removed as soon as possible and the area is rehabilitated. If non-functional structures are not required any longer, and not removed, it must be maintained as if it is in used to prevent the environmental degrading of the area.

The Applicant, SANParks, is responsible for:

- ✚ Removal of the construction building rubble to a suitable disposal facility,
- ✚ Ensure that suitable arrangements be made to protect the environment against long term negative impacts,
- ✚ Minimize negative visual impacts,
- ✚ Maintain the storm water channels in a working condition,
- ✚ To clean up contaminants of the environment,
- ✚ Prevent erosion through regular monitoring and rehabilitation of degraded areas.

EMP: CONTRACTORS RESPONSIBILITY				
DEVELOPMENT OF THE AGULHAS LIGHTHOUSE PRECINCT, AGULHAS NATIONAL PARK, WESTERN CAPE PROVINCE				
MITIGATION MEASURE: (Objective and Targets)	PERFORMANCE INDICATOR	COMPLIANCE & COMMENTS	DATE	SIGNATURE
<p>Objective: To ensure acceptable impact & management of environmental issues at main site office and storage site during construction by proper planning of layout of infrastructure placement</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Draw up and submit for approval a Site Layout Master Plan. This plan must show the final positions and extent of all permanent and temporary site structures and infrastructure, 2) The planning for layout must be done in consultation on-site with the ESA. 	<ul style="list-style-type: none"> ➤ Site Layout Plan approved by the ESA 			
<p>Objective: To secure the Contractor's camp area against unauthorized entry</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Fence or suitably secure main site office and material storage area. 	<ul style="list-style-type: none"> ➤ Site Office & Material Storage Site is secure and there is no unauthorized entry 			
<p>Objective: Prevent erosion and the dilapidation of the access road</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Proper maintenance should be done to ensure the quality of the access road, 2) Implement erosion protection works at identified problem areas. 	<ul style="list-style-type: none"> ➤ The access road is in a acceptable condition 			

EMP: CONTRACTORS RESPONSIBILITY				
DEVELOPMENT OF THE AGULHAS LIGHTHOUSE PRECINCT, AGULHAS NATIONAL PARK, WESTERN CAPE PROVINCE				
MITIGATION MEASURE: (Objective and Targets)	PERFORMANCE INDICATOR	COMPLIANCE & COMMENTS	DATE	SIGNATURE
<p>Objective: To retain topsoil for later use in closure</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Remove topsoil approximately 300 mm deep from establishment area and stockpile areas, 2) Provide containment and settlement facilities for effluents from concrete mixing and washing (concrete vehicle wash bag) facilities, 3) Provide spill containment facilities for hazardous materials like fuel and oil. 	<ul style="list-style-type: none"> ➤ Sufficient topsoil for closure available ➤ No topsoil contaminated with cementations materials, fuel or oil 			
<p>Objective: To avoid destruction of vegetation</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Minimize extent of removal of any vegetation, 2) Do not remove any large tree without permission from the ESA, 3) No open fires permitted under trees. 4) Physical marking of trees and sensitive vegetation to be protected. No large trees may be removed without the permission of the ESA, 5) Rehabilitate denuded areas with appropriate species as per specifications. 	<ul style="list-style-type: none"> ➤ No unnecessary loss of vegetation ➤ Protection of valuable vegetation as indicated and marked/fenced off by the ESA 			

EMP: CONTRACTORS RESPONSIBILITY				
DEVELOPMENT OF THE AGULHAS LIGHTHOUSE PRECINCT, AGULHAS NATIONAL PARK, WESTERN CAPE PROVINCE				
MITIGATION MEASURE: (Objective and Targets)	PERFORMANCE INDICATOR	COMPLIANCE & COMMENTS	DATE	SIGNATURE
<p>Objective: To avoid disturbance to the fauna in the area.</p> <p>Targets:</p> <p>1) No hunting, snaring, shooting, nest raiding or egg collection by the construction staff should be allowed.</p>	<p>➤ Protection of the fauna that may be in the area of construction</p>			
<p>Objective: Contain soils and materials within defined areas and prevent contamination of storm water runoff.</p> <p>Targets:</p> <p>1) Ensure that excavation areas have a predetermined stockpile area for construction materials and excavated material,</p> <p>2) Disposal of waste excavated material at appropriate waste disposal sites,</p> <p>3) Concrete mixing to be carried out away from sensitive areas and on impermeable surfaces,</p> <p>4) Construct and operate the necessary collection facilities and storm water management systems such as diversion berms, ditches, drains, oil separation sumps, gross water ways etc. to prevent contamination of any water,</p> <p>5) Provide suitable and sufficient ablution facilities,</p> <p>6) Do not locate any site toilet, sanitary convenience,</p>	<p>➤ Correct stockpiling of excavated material on site</p> <p>➤ No pollution of water courses</p>			

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MITIGATION MEASURE: (Objective and Targets)	PERFORMANCE INDICATOR	COMPLIANCE & COMMENTS	DATE	SIGNATURE
<p>septic tank or French drain within the 1:100 year flood line, or within a horizontal distance of 100m (whichever is greater) of a watercourse or drainage line,</p> <p>7) Combine drinking water facilities with hand washing facilities near site toilet.</p>				
<p>Objective: Prevent erosion of areas</p> <p>Targets:</p> <p>1) Ensure correct drainage of areas,</p> <p>2) All the areas disturbed during construction work needs to be landscaped to a standard similar or better than before on completion of the works before replacement of topsoil,</p> <p>3) The layout of the area should be optimized to limit the erosion potential,</p> <p>4) The design of all works shall include measures to prevent erosion resulting from concentration,</p> <p>5) Rehabilitate denuded areas especially slopes with appropriate species and erosion protection measures i.e. geotextiles, rocks: topsoil mixtures as per specifications.</p>	<p>➤ Construction site erosion free</p>			

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DEVELOPMENT OF THE AGULHAS LIGHTHOUSE PRECINCT, AGULHAS NATIONAL PARK, WESTERN CAPE PROVINCE**

MITIGATION MEASURE: (Objective and Targets)	PERFORMANCE INDICATOR	COMPLIANCE & COMMENTS	DATE	SIGNATURE
<p>Objective: To avoid pollution of environment with waste materials</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Provide adequate waste bins on-site equipped with a lid to ensure no pollution, 2) Set up system for regular waste removal to approved facility, 3) Minimize waste by sorting wastes into recyclable and non recyclable wastes, 4) No solid waste may be burned on site, 5) Contain chemical spills, and arrange for cleanup / control by the supplier, or by professional pollution control personnel, 6) Hazardous substances, e.g. diesel, oil, etc. required by the contractors shall be stored in dedicated areas developed to minimize spills and protect the environment. All storage areas, spillage containment areas, containers of hazardous substances and dangerous equipment shall be clearly and prominently marked as such. 	<p>➤ Appropriate management of wastes</p>			

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DEVELOPMENT OF THE AGULHAS LIGHTHOUSE PRECINCT, AGULHAS NATIONAL PARK, WESTERN CAPE PROVINCE				
MITIGATION MEASURE: (Objective and Targets)	PERFORMANCE INDICATOR	COMPLIANCE & COMMENTS	DATE	SIGNATURE
<p>Objective: Provide adequate measures to ensure workers are not placed at undue risk.</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Ensure that PPE is available to workers, 2) Adhere to the Occupational Health and Safety Act, 3) Keep a first aid room stocked, 4) Issue all workers with necessary health and safety items, 5) Provide warning signs to motorists, in advance, of the working area. 	<ul style="list-style-type: none"> ➤ Safe working conditions for workers 			
<p>Objective: To avoid dust nuisance from excavated materials or construction materials</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Implement dust suppression measures e.g. regular watering, 2) Concrete mixing to be carried out away from sensitive areas, 3) Build a settling dam off the concrete vehicle wash. 	<ul style="list-style-type: none"> ➤ Appropriate management of dust ➤ No complaints from workforce 			

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MITIGATION MEASURE: (Objective and Targets)	PERFORMANCE INDICATOR	COMPLIANCE & COMMENTS	DATE	SIGNATURE
<p>Objective: Provide adequate measures to ensure no fire risks.</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Establish and maintain fire breaks around the Work Sites if as and when specified by the ESA and as required by applicable legislation and the local authority. 2) Ensure Work Site and the contractor's camp is equipped with adequate fire fighting equipment. This includes at least rubber beaters when working in veld areas, and at least one fire extinguisher of the appropriate type irrespective of the site, 3) No open fires are permitted anywhere on site. Restrict contained fires for heating and cooking (i.e. in a fire drum) to designated areas on site, 4) Prevent employees from creating fires randomly outside designated areas, 5) Do not store any fuel or chemicals under trees, 6) Do not store gas and liquid fuel in the same storage area, 7) Do not permit any smoking within 3m of any fuel or chemical storage area, or refuelling area. 	<p>➤ No fires as a result of Works on site: the Contractor will be held liable for any damage to property adjoining the Site as a result of any fire caused by one of his employees</p>			

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MITIGATION MEASURE: (Objective and Targets)	PERFORMANCE INDICATOR	COMPLIANCE & COMMENTS	DATE	SIGNATURE
<p>Objective: To avoid noise nuisance from construction equipment</p> <p>Targets:</p> <ol style="list-style-type: none"> 1) Limit working hours of noisy equipment to daylight hours, 2) Fit silencers to equipment, 3) Unless otherwise specified by the ESA, normal work hours will apply (i.e. from 06:30 to 16:15, Mondays to Fridays), 4) Ensure that employees and staff conduct themselves in an acceptable manner while on site, both during work hours and after hours. 	<p>➤ Appropriate management of noise levels</p>			

5. EMERGENCY RESPONSE PLAN

The objective of this section is to provide a brief summary of options available to the project manager. The details of the design will reside with the designers, but cognizance should be taken of the design philosophy and key aspects given in the guidelines to problem solving given below.

5.1 Typical remedial work options

The following table is provided to assist the inspector and project manager with problem solving:

OBSERVATION OR EVENT	ACTION BY INSPECTOR OR OBSERVER	ACTION BY PROJECT MANAGER
<p>Spillage of diesel or hydrocarbons on soil</p>	<p>Report to Project Manager and continue observations.</p> <p><u>Also check:</u></p> <ul style="list-style-type: none"> ➤ That the source causing the spillage is decommissioned, and that the affected area is isolated to prevent spreading of the hazardous substance. 	<p>Action will be required ASAP by following the next steps:</p> <ul style="list-style-type: none"> ➤ Dig down into the soil to see how far down the pollution penetrated, ➤ If less than 300mm penetration: <ul style="list-style-type: none"> a. Turn the soil over to expose it to the air, b. Apply Mono Ammonium Phosphate (MAP) at a rate of 58gr/m² to the dug up soil c. Water enough to keep the soil moist. ➤ If penetration is greater than 300mm: <ul style="list-style-type: none"> a. Remove the affected soil and spread in a layer not more than 300mm thick, b. Apply MAP at a rate of

OBSERVATION OR EVENT	ACTION BY INSPECTOR OR OBSERVER	ACTION BY PROJECT MANAGER
		<p>50gr/m²</p> <p>c. Water enough to keep the soil moist.</p> <ul style="list-style-type: none"> ➤ Repeat the above steps every 6 weeks or until the soil is clean.
<p>Erosion of access roads</p>	<p>Report to Project Manager and continue observations.</p> <p><u>Also check:</u></p> <ul style="list-style-type: none"> ➤ That all vehicular movement is restricted to existing access routes to prevent crisscrossing of tracks through undisturbed areas. 	<p>Action will be required ASAP:</p> <ul style="list-style-type: none"> ➤ Implement erosion protection works at identified problem areas, ➤ Implement remedial works to be done at affected areas in order to restore the area to its previous or better status.

6. INCIDENT REGISTER

INCIDENT REGISTER					
DEVELOPMENT OF THE AGULHAS LIGHTHOUSE PRECINCT, AGULHAS NATIONAL PARK, WESTERN CAPE PROVINCE					
NAME OF PERSON REPORTING THE INCIDENT	INCIDENT	DATE OF INCIDENT IDENTIFIED	HOW WAS INCIDENT ADDRESSED?	DATE OF RECTIFICATION	SIGNATURE

