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## **Environmental Management Program (EMPr)**

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**Hondeklip Bay Land-based Abalone Farm, Northern Cape Province**

**2013**

**Prepared by:**  
**Ecosense CC**

**Prepared for:**  
**University of Stellenbosch**

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## **1 BACKGROUND INFORMATION**

### **1.1 Introduction**

The Division of Aquaculture, Stellenbosch University (SU) has been appointed by the Department of Science and Technology (DST) to build an abalone hatchery in Hondeklip Bay in the Northern Cape Province. The rationale for establishing the hatchery includes supporting government abalone ranching and stock enhancement initiatives; facilitating the uptake of the Innovation Fund abalone genetic improvement technologies; and facilitating future research and development programs. Importantly, the hatchery aims to contribute to poverty reduction and empowerment of the historically disadvantaged Hondeklip Bay coastal community through job creation, skills development, and business participation.

The Hondeklip Bay project entails the development of an abalone hatchery that would be capable of supplying both abalone ranching and land-based abalone farming operations in the Northern Cape Province and as such includes both traditional hatchery components (broodstock conditioning, larval rearing, settlement and weaning) and grow-out to larger sizes for abalone ranching.

This document deals with construction, operational and decommissioning phase aspects of the project and surrounding natural environment, which will require management to minimize negative environmental impacts and maintain or improve the quality of the natural and man-made environment. While providing guidelines as to how these aspects should be managed, this document should be seen as open-ended, requiring review and updating as new information becomes available in order for it to remain relevant to the requirements of the site and the environment.

The document has been compiled by Ecosense CC overseen by SACNASP-registered professionals.

### **1.2 Objectives of the EMPr**

The EMPr aims to:

- set out the mitigation measures and environmental specifications which must be implemented in order to ensure that potential negative impacts on the environment are minimised and positive impacts maximised;
- provide a structure or framework within which the environmental management requirements will be implemented, audited and reported on;
- state standards and guidelines that are required to be achieved in terms of environmental legislation and authorization conditions; and,
- provide a clear indication of the environmental management outcomes of each of the role players involved.

**(NOTE: The annexure 2: Internal Environmental Monitoring & Reporting Checklist shall be generated when acceptance / authorisation /commentary of the submissions have been complete but has been listed to ensure provision is made by management.)**

### **1.3 Format and Structure of the EMPr**

This EMPr has been divided into a number of Sections, as indicated in Table 1 below.

**Table 1: Structure of the EMPr**

<b>Section 1</b>	<b>Introduction</b>	Provides background information regarding the site, the proposed project and the EMPr.
<b>Section 2</b>	<b>Implementation of the EMPr</b>	Provides details regarding implementation of the EMPr.
<b>Section 3</b>	<b>Construction Phase Management Requirements (CEMP)</b>	Provides environmental management procedures to be implemented during the construction phase of the development. This is incorporated into a Construction Phase Environmental Management Plan (CEMP) which can be used as a stand-alone document during this phase of work.
<b>Section 4</b>	<b>Operational Environmental Management Requirements (OEMP)</b>	Provides a set of environmental management procedures to be implemented during the operational phase of the project. Additional procedures can be added as required.

<b>Section 5</b>	<b>Decommissioning Phase Requirements</b>	Provides environmental requirements for the decommissioning phase of the project.
<b>Section 6</b>	<b>References</b>	References other professional's documents used to source information background to this EMPr.
<b>Section 7</b>	<b>Annexure</b>	Annexures general to the EMPr (excluding appendices to the CEMP and OEMP documents)

## 1.4 Abbreviations and definitions

For the purposes of this EMPr the following general abbreviations and definitions shall apply:

**Table 2: Abbreviations and definitions used in this EMPr**

<b>EA</b>	Environmental Authorisation – issued by DEA
<b>CEMP</b>	Construction Phase Environmental Management Plan
<b>DEMP</b>	Decommissioning Environmental Management Plan
<b>DEA</b>	Department of Environmental Affairs
<b>OEMP</b>	Operational Phase Environmental Management Plan

<b>Environment</b>	The aggregate of surrounding objects, conditions and influences that influence the life and habits of man or any other organism or collection of organisms.
<b>Environmental Management Plan</b>	Environmental Management Plans forming part of the overarching Environmental Management Program (EMPr), namely the Construction Phase Environmental Management plan (CEMP), the Operational Phase Environmental Management Plan (OEMP) and the Decommissioning Environmental Management Plan (DEMP).
<b>External Environmental Auditor</b>	An independent (not an employee of the developer or with a business interest in the project) suitably qualified and competent environmental consultant with at least 3 years' experience in environmental management and environmental compliance auditing.
<b>Developer</b>	University of Stellenbosch
<b>Site</b>	The boundary and extent of project operations and infrastructure.
<b>Operations Manager</b>	The manager employed by the University of Stellenbosch to oversee day to day operations on the project site.

## 1.5 Project Description

The proposed project consists of an abalone farm of approximately 13.5 ha (1.5 ha initially, the remainder reserved for future expansion), which includes a site in the harbour area of the town, as well as a site ± 1.5km south of Hondeklip Bay town (to be referred to as 'Aristea site') (see figure below). The design brief for the hatchery includes 42 different facility and system components, including water reticulation, hatchery, nursery, grow-out and support systems. The designs also include comprehensive bio-security systems.

Associated infrastructure on the site outside town would consist of various buildings for the keeping of broodstock, larval rearing, settlement, weaning; a pump house, abalone grow-out tanks and associated pipework, generator room, storage of equipment and supplies, a workshop, laboratories and water treatment stations. Manager's and workers' houses, an office, ablutions, fencing, access roads as well as a marine off

take pipeline and a marine effluent outfall pipeline. The existing power line would be upgraded and the site would be connected to this line for power. The proposed Aristeia site has been selected to be situated adjacent to an old marine off-take pipeline, which is located at the best possible site along the coast, due to:

- close proximity to the sea (short pumping distance),
- the existence of a gully that protects infrastructure from wave action and provide calm water conditions resulting in a high water quality (low turbidity) and the ability to service pump infrastructure on a regular basis,
- a relatively flat angle between the pump house and the abalone farm (compared to some other sites along the coast).

The proposed town site has been used as pilot site since 2006 and would be upgraded to continue in a more commercial capacity.

## **1.6 Description of Operations**

The Abalone Farm will be situated on a flat area at the Aristeia site or on the site of the disused crayfish factory in the town of Hondeklip Bay on the West Coast of South Africa.

The farm will keep abalone broodstock, spawn the broodstock at regular intervals and produce juvenile abalone through procedures including larval rearing, settlement, and weaning. Some of the juveniles will be on-grown to larger sizes to supply abalone ranching operations. The facility will be supplied with seawater pumped from the sea. Pumped seawater will flow through the tanks housing abalone and will be returned to the sea after use. Cultured abalone will be fed a combination of natural and artificial feeds. Animal husbandry procedures include stocking, splitting, grading, protection from predators etc.



**Figure 1: Locality of Aristeia and Town site in proximity to Hondeklip Bay town**

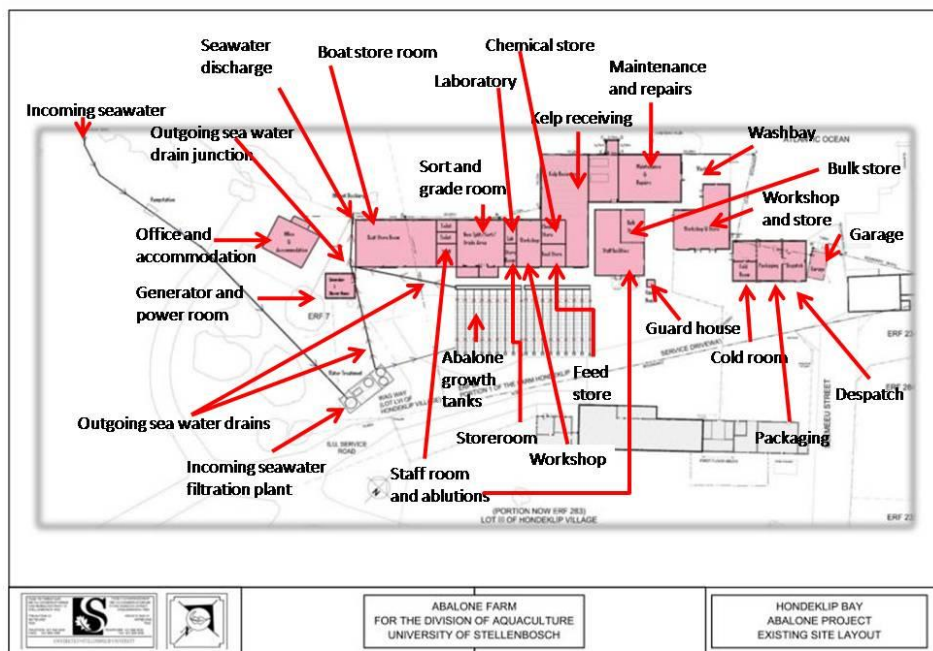


Figure 2: Layout of the facilities, which would be similar at both sites

An aerial photograph of the town site reveals its proximity to the shoreline. It is in fact situated on the rock platform and waves break against the structure (constructed in 1955) during storm surges.



Figure 3: Aerial view of Town site (current pilot project)



## 2 IMPLEMENTATION OF THE ENVIRONMENTAL MANAGEMENT PROGRAM

This EMPr document describes mitigation measures in detail, identifying specific people or organisations to undertake specific tasks, in order to ensure that negative impacts on the environment are minimised and positive impacts optimized during project operations.

### 2.1 Legal Status

By virtue of the fact that this EMPr document forms part of the project application on the basis of which the authorisation will be/has been granted by DEA, compliance with this EMPr will be mandatory. This EMPr includes all relevant documentation contained or referred to within it, along with any amendments or appendices to this document. It should be noted that the following management plans as requested by the DEA is not applicable to this development for the reasons stated or has been included as a specification or within another relevant specification:

**Table 3: Reference table for specific management plan requirements as stipulated by the DEA**

Plant rescue and protection plan by vegetation specialist and in consultation with the ECO	As described in the BAR, only the vegetation on the Aristeia site would need to be cleared for construction and this would need to happen within the constraints of the archaeological features to be identified through test excavations (refer to Section 3.14.4 of the EMPr). Any vegetation clearance would be limited to the building and infrastructure footprint and be demarcated. No re-vegetation/rehabilitation is required as part of the project, rescue is only feasible if the rescued plant material can be trans-located to a third party that has a feasible use for the plant material at the time. As the viability of plant search and rescue is therefore unknown at this stage, the EMPr specifies a method statement to be compiled before commencing with vegetation clearance (See Section 3.14.1 and 2)
Open space management plan	Not applicable – there would be no open space as part of the proposed development. In general the housekeeping specification would apply, Section
Re-vegetation and habitat rehabilitation plan	Not applicable – development would be restricted to buildings and associated infrastructure with no re-vegetation anticipated to be required.
Alien invasive management plan	The site is currently free of alien vegetation. Should this be brought in from an external source, management actions would be required. See Section 4.7.9.
Storm water management plan	See Section 3.14.8 for storm water and erosion management during construction. See Section 4.7.6 for storm water and erosion management during operation
Erosion management plan	Note that erosion management is related to storm water management and have been addressed in conjunction to each other. See Section 3.14.8 for storm water and erosion management during construction. See Section 4.7.6 for storm water and erosion management during operational phase of the development.
Traffic management plan	Traffic impacts may occur during the construction phase and relates to the transport of materials, creation of dust and safety issues, see Section 3.14.9, 3.14.10 and 3.14.16. Traffic impacts during operational phase would be low and does not require specific management actions.
Protection of hydrological features	Not applicable – there are no hydrological features on site.

### 2.2 Key Legislation Applicable to the Project

The following is a list of key environmentally related legislation that is applicable to the project. It should be noted that this is not a comprehensive list of all legislation that apply, only those deemed most relevant to this context.

**Table 4: Key environmental legislation application to the University of Stellenbosch and the Department of Science and Technology**

Act, Ordinance, By-Law	Section	Description	Relevance To This Project
National Environmental Management Act (No 107 of 1998)	S 28(1)	Duty of Care responsibilities	Responsible for the duty of care for protection of natural assets.
National Environmental Management: Biodiversity Act (No 10 of 2004)	Chapter 3, 4, 5 & 6	Biodiversity planning and monitoring	Applicable in terms of maintaining genetic integrity of natural species and ecosystems, bio-security issues, impact on wild species diversity at seeding sites.
National Environmental Management: Integrated Coastal Management Act (No 24 of 2008)	Chapter 8	Discharge of effluent into coastal waters would require a permit	Not applicable to this project.

*Hondeklip Bay Abalone Farm  
Environmental Management Program (May 2013)*

<b>Act, Ordinance, By-Law</b>	<b>Section</b>	<b>Description</b>	<b>Relevance To This Project</b>
National Environmental Management: Waste Act (No 59 of 2008)	Chapter 4 Pt. 3 & 5	Regulates waste management in order to protect health and the environment.	Calls for reduction, re-use, recycling and recovery of waste, sets out requirements for segregation, storage, collection and transportation of waste.
National Water Act (No 36 of 1998)	S 3(3)	Regulation of flow and control of all water in RSA	Ensure use of water remains within limits
	S 19	Pollution prevention	Prevent pollution of water sources e.g. via storm water.
	G.A. 3.7	Discharging of domestic and industrial wastewater into water resources	Sets water quality limits for waste water that may be directed into a water resource e.g. via storm water.
	Reg 15	Combating invader plants	Alien vegetation must be removed from premises.
Occupational Health and Safety Act (No 85 of 1993)	All	Primarily aimed at ensuring the health and safety of persons at work, and visitors. Specifies the basic systems that need to be in place and measures that need to be taken.	Site staff and visitors need to be protected from health and safety risks.
	S 9(1)	Every employer must conduct his undertaking so as to ensure that persons other than his employees who are directly affected by his activities are not thereby exposed to hazards to their health and safety.	The project must minimise the hazards to both staff and visitors.
South African National Standards	SANS 10328	Noise standards	In accordance with SANS 10328, the predicted impact that noise emanating from a proposed development would have on occupants of surrounding land is assessed by determining whether the rating level of the predicted ambient noise would exceed the residual noise of exceed the acceptable rating level of noise on that land.
Hazardous Chemical Substances regulations (25 August 1995)	9A(1)	Storage and handling of hazardous chemical substances	To ensure the safety of people working with hazardous chemicals (specifically fuels), and safe storage, use and disposal of containers.
National Environment Management: Air Quality Act (No. 39 of 2004)	S 27, 32, 34, 35,	Prevention of air pollution (dust, smoke, noise and offensive odours)	The necessary steps to be taken in prevention of air pollution on site.
National Heritage Resources (Act No. 25 of 1999)	S 44(1)	Preservation and protection of heritage resources	Protection of possible heritage resources that may be found on site.
National Veld and Forest Fire Act (Act No 101 of 1998)	S 12(1)	Duty of land owner to prevent fire from spreading to neighbouring properties	Cautionary steps in avoiding the spread of fire to and from neighbouring properties.
Conservation of Agricultural Resources Act (No 43 of 1983)	Reg 15	Combating invader plants	Alien vegetation must be removed from premises.
	S 6	Conservation of soil and water resources	Erosion control, water runoff management, conservation of existing water resources/drainages
Animal Health Act No. 7 of 2002	S 16 & 17	Control measures for the prevention of diseases and parasites and for schemes to promote animal health.	Implementing measures to prevent diseases.
Abalone Ranching or Stock Enhancement (Government Gazette No. 34241 April 2011)	All	Criteria for allocating rights for Abalone ranching or stock enhancement pilot projects	Abalone ranching application.
General guidelines for marine ranching (Government Notice No. 728)		Guidelines for marine ranching	Abalone ranching application.

The above list indicates the main applicable legislative requirements and is not implied to be complete or exhaustive.

### 3 CONSTRUCTION PHASE MANAGEMENT PLAN (CEMP)

#### 3.1 INTERPRETATIONS

For the purposes of this CEMP the following abbreviations and definitions shall apply:

**Table 5: Abbreviations and definitions used in this CEMP**

<b>CEMP</b>	Construction Phase Environmental Management Plan
<b>DEA</b>	Department of Environmental Affairs
<b>DWA</b>	Department of Water Affairs
<b>EA</b>	Environmental Authorisation – issued by DEA
<b>HNC</b>	Heritage Northern Cape
<b>MSDS</b>	Material Safety Data Sheet
<b>NEMA</b>	National Environmental Management Act (No. 107 of 1998)
<b>NEMWA</b>	National Environmental Management Waste Act (No. 59 of 2008)
<b>OM</b>	Operations Manager employed by the University of Stellenbosch to oversee day to day operations on the project site, also fulfilling the Environmental Site Manager role and responsibilities during the construction phase.
<b>PA</b>	Principle Agent i.e. Engineer
<b>SAHRA</b>	South African Heritage Resource Agency - the statutory body responsible for heritage resource management
<b>Bund</b>	Enclosure under and around a storage facility to contain any spillage
<b>Batch Plant</b>	Site for the mixing and production of concrete or plaster, and associated equipment and materials
<b>Contractor</b>	The principal persons / company undertaking the construction of the development. <ul style="list-style-type: none"> <li>• The main contractor as engaged by the Developer;</li> <li>• Sub-contractors; and</li> </ul> Any other contractor from time to time engaged by the Developer directly in connection with the construction part of the works.
<b>Developer</b>	University of Stellenbosch and the Department of Science and Technology
<b>Environment</b>	The aggregate of surrounding objects, conditions and influences that influence the life and habits of man or any other organism or collection of organisms.

<b>Environmental Management Program</b>	The overarching document that contains the individual environmental management plans for this project, including this Construction Phase Environmental Management plan (CEMP).
<b>Local Authority</b>	Kamiesberg Municipality
<b>“No-go” Areas</b>	Areas identified as being environmentally sensitive in some manner and delineated on plan, and on the site with pegs or fencing and which are out of bounds to unauthorised persons. Authorisation must be obtained prior to entry.
<b>Site</b>	The boundary and extent of development works and infrastructure, including any areas off the main site on which works are to be carried out in order to allow the development to proceed successfully.
<b>Structure</b>	Means any man-made feature affixed to the ground or attached to something located on the ground, including but not limited to fences, walls, berms, levees, fill, storage tanks, shelters or buildings.
<b>Storm water</b>	Water resulting from natural precipitation and/or accumulation and includes rainwater, groundwater and spring water, but excludes water in a water or wastewater reticulation system.
<b>Topsoil</b>	The top 150 mm of soil (average); include vegetation and rocks
<b>Works</b>	The construction operations and all related and incidental works, such as site works, earthworks, installation of services, rehabilitation etc, carrying to completion of the development.

## 3.2 IMPLEMENTATION OF THE CEMP

This CEMP document describes mitigation measures in detail in order to ensure that impacts on the environment are minimised during the Construction Phase of this project. The CEMP is applicable to all works comprising the development of this project. It is an open-ended document implying that information gained during construction activities and/or monitoring of procedures on site could lead to changes in the CEMP.

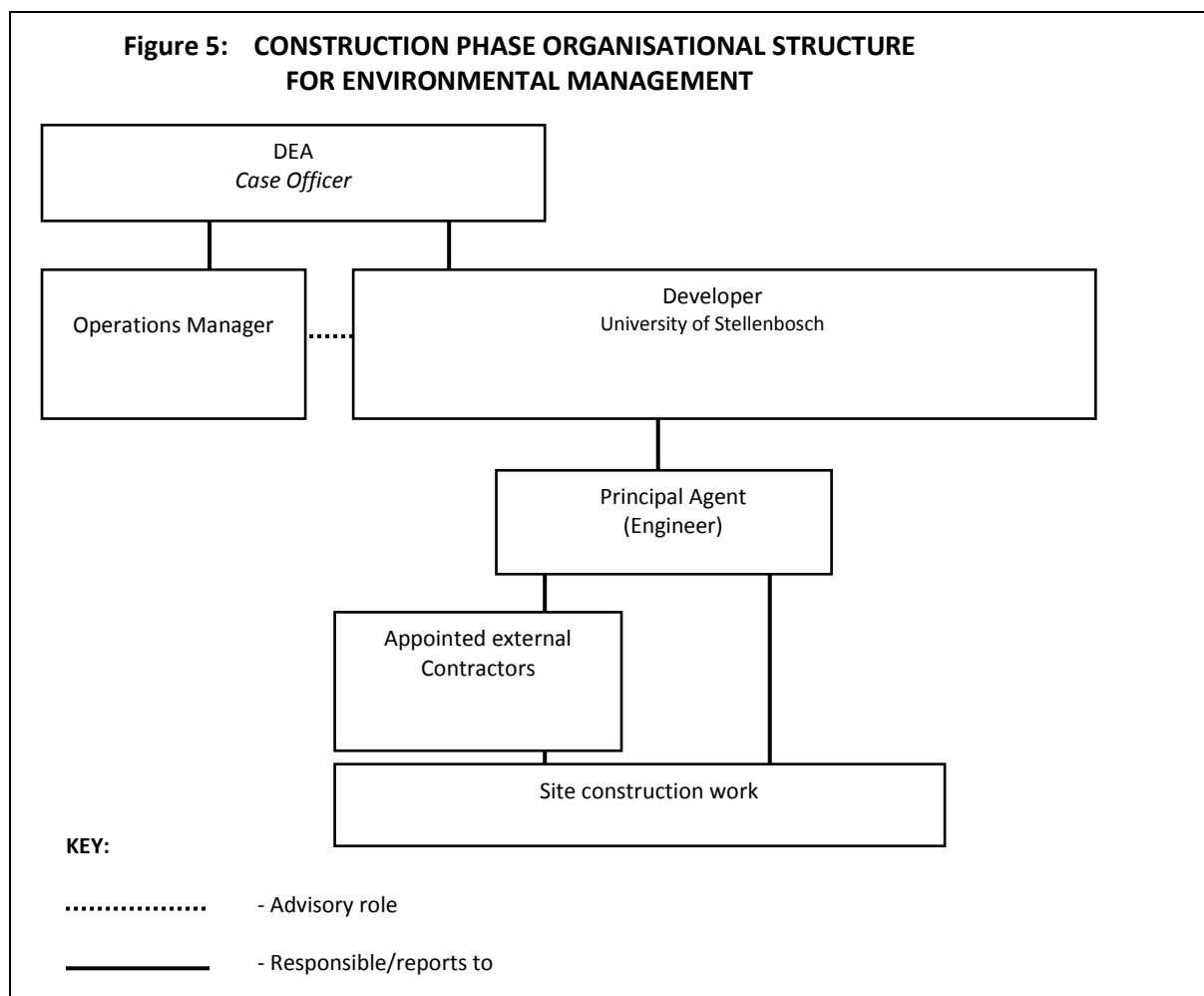
The CEMP is to be implemented by the identified responsible parties in the following section, who are expected to co-operate closely to minimise or avoid unnecessary environmental impacts.

Non-compliance penalties are described under section 3.14.19 of the CEMP and must be **included into the official contract documentation of each of the principal contractors appointed to the project**. The Developer, Engineer and Contractor are obliged to inform the OM immediately of events that have/will cause serious environmental damage or of any breaches of the Environmental Authorisation. The OM in turn will on behalf of the Developer immediately inform DEA (within 24 hours), the PA and, where required, the Local Authority of such events and the measures taken to address them.

### 3.2.1 Responsibilities and Organizational Structure

The key role-players during the Construction Phase of the development, for the purposes of environmental management on site include, but are not limited to: the Developer, the PA for implementing the works, any appointed Contractors, the Operations Manager and representatives of the relevant Authority/ies.

Lines of communication and reporting between the various parties are illustrated in **Figure 5**. Details of the responsibilities of each of the key role-players have been provided in sections 3.2.1.1 to 3.2.1.4



### 3.2.1.1 The Developer

The Developer refers the University of Stellenbosch who is ultimately responsible for compliance with all conditions of approval of the development or any aspect thereof by any authority. With respect to the Construction Phase of the Development, the Developer is to:

- ensure that all relevant approvals and permits have been obtained prior to the start of construction activities on site;
- ensure that the requirements as set out in this CEMP and the Environmental Authorisation issued by DEA (**refer to Annexure 1 of the EMPr**) and any other conditions of approvals by the relevant Authorities are adhered to and implemented by itself and any person on the institutions behalf incl. agents, employees, contractors etc;
- ensure that DEA is given at least one week's written notice prior to the construction start including name and contact details of the Operations Manager fulfilling the role and responsibilities of the Environmental Site Manager
- provide all contractors working on the project (if applicable) with a copy of this CEMP as part of tender contract documentation to allow the contractors to cost for its requirements within their respective construction contracts;
- Respond to third party or public queries and/or complaints relating to construction operations.

### 3.2.1.2 The Principal Agent

For the purposes of this document "The Principal Agent" refers to the architect for the development, or any other person such as the project manager, etc; authorised by the Developer, to be responsible for the technical and contractual implementation of the works/part of the works to be undertaken.

The responsibilities of the Principal Agent are to:

- ensure that the requirements as set out in this CEMP and by the relevant Authorities are adhered to and implemented (on the behalf of the Developer);
- assist the OM in ensuring that the conditions of the CEMP are being adhered to and promptly issuing instructions requested by the OM, to the Contractor; all site instructions pertaining to environmental matters issued by the Principal Agent are to be copied to the OM;
- assist the OM in making decisions and finding solutions to environmental problems that arise during the Construction Phase;
- reviewing and approving construction method statements with input from the OM;

- ordering the removal of person(s) and/or equipment not complying with the specifications or issuing a stop works order (as required by the OM or otherwise);
- issuing of penalties for transgressions of environmental site specifications;
- Providing input into the OM's on-going internal review of the CEMP.

### **3.2.1.3 The Contractor**

For the purposes of this document "The Contractor" refers to any directly appointed (by the Developer) company or individual undertaking the implementation of the works.

The Contractor is to:

- ensure implementation of all applicable Environmental Management Specifications, including all additional requirements related with approved method statements, during all works on site, failing which penalties, as outlined in the environmental management specifications be imposed by the Principal agent/OM;
- ensure that all of its sub-contractors, employees, suppliers or agents etc. are fully aware of the environmental management requirements detailed in the Environmental Management Specifications;
- liaise closely with the Principal Agent and the OM and ensure that the works on site are conducted in an environmentally sensitive manner;
- inform the Principal Agent as well as the OM should environmental issues on site go wrong, e.g. dumping, pollution etc;
- carry out instructions issued by the Principal Agent, on request of the OM, required to fulfil his/her compliance with the CEMP.

### **3.2.1.4 Operations Manager (fulfilling role of ESM/ECO)**

The OM's duties, *inter alia*, must be to facilitate compliance with the CEMP through monitoring and proactive and open communication channels with the project/site management and, when necessary, enforcing the environmental requirements. Where the OM is not qualified/lack experience to complete certain tasks or responsibilities the Developer shall consult with an external environmental practitioner to perform outstanding issues.

The OM's responsibilities include the following:

- monitoring and verifying that the CEMP and Environmental Authorisation issued by DEA is adhered to by inspecting the Site and surrounding areas regularly (minimum fortnightly) during period of active construction with regard to compliance with the CEMP and taking action if the specifications are not followed;
- to environmentally educate and raise the awareness of the Contractor and his staff as to the environmental requirements relating to the Site and to facilitate the spread of the correct attitude during works on Site;
- reviewing and approving construction method statements together with the Principal Agent;
- assisting the Contractor in finding environmentally responsible solutions to problems;
- keeping records of all activities/ incidents on Site in a Site Inspection Report book concerning the environment;
- keeping a register of complaints and report these first to the Principal Agent for action / follow-up;
- recommending the issuing of penalties for transgressions of environmental site specifications to the Principal Agent;
- completing start-up and site closure checklists – **refer to Appendix 1 of the CEMP**;
- completing a monthly summary report detailing levels of compliance to be forwarded to the project team and case officer at DEA;
- keeping a photographic record of progress on Site from an environmental perspective;
- undertaking a continual internal review of the CEMP and making recommendations to the Principal Agent.

The OM has the authority to recommend to DEA that works be stopped, if in his/her opinion serious harm to, or impact on, the environment is imminent, is likely to occur or has occurred and such actual or potential harm or impact is in contravention of this CEMP, and which is, or be, caused by construction, or related works. This would only take place in urgent / emergency cases, or when there is conflict with the Principal Agent. This is to be reported on and minuted at the project team site meetings.

Upon serious failure by the Contractor or Contractor's employee(s) to show adequate consideration to the environmental aspects of this contract, the OM recommend to the Principal Agent and the project management team to have the Contractor's representative or any employee(s) removed from the site or have 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.

The OM will be responsible for the compilation of a final closure checklist for the project, completed when all works related to the project have been completed and the site has been cleared of all construction related debris, materials and/or equipment not forming part of the permanent works. This, together with a final written report will be submitted to DEAP in order to achieve "environmental closure" of the site.

### **3.2.2 Environmental Education Programme**

All labour teams are to attend an environmental awareness presentation (approximately 1 hour long) presented by the OM within 2 weeks of establishment on site to familiarise them with the environmental aspects of the CEMP.

The contractor shall further to this, present important environmental requirements (**per Appendix 2 of this CEMP**) as part of the compulsory Health and Safety induction meetings presented to all new site staff and contractors that have not attended the OM's training session. The OM reserves the right to present additional dedicated environmental inductions for the duration of the contract for any employees including sub-contractor staff, should such additional lectures be deemed necessary by the OM i.e. in terms of poor compliance by a certain team, problem aspects or failure of the principal contractor to adequately present lectures.

### **3.2.3 Method Statements**

The Contractor be required to provide Method Statements prior to work commencing on aspects of the project deemed or identified to be of greater risk to the environment and/or which not be covered in sufficient detail in the CEMP, when called upon to do so by the Principal Agent or OM.

A Method Statement describes the scope of the intended work in a step-by-step description in order for the OM to understand the Contractor's intentions. This will enable them to assist in devising any mitigation measures, which would minimise environmental impact during these tasks. For each instance where it is requested that the Contractor submit a Method Statement, the template provided in **Appendix 3 of this CEMP** should be used to guide the submission.

All Method Statements are to be to the satisfaction of the OM and, where practical and deemed necessary, shall be endorsed as being acceptable by the environmental representative of the Relevant Authority. Changes to, and adaptations of, Method Statements can be implemented with the prior consent of all parties.

Approved Method Statements shall be readily available at the Site Office and shall be communicated to all relevant personnel and sub-contractors. The Contractor shall carry out the works in accordance with the approved Method Statement.

### **3.2.4 OM Inspection Log**

The OM will maintain on file, site inspection report logs that record environmental issues as they occur on site for record keeping purposes.

### **3.2.5 Site Memo Entries**

Site memos, stipulating recommended actions required to improve compliance with the CEMP by the Contractor will be issued by the OM to the Principal Agent and the Contractor/labour team leaders.

Comments made by the OM in the Site Memo's are advisory and all Site Instructions required only be issued by the Principal Agent. Site Memo's will also be used for the issuing of stop work orders for the purposes of immediately halting any particular activity(ies) of the Contractor deemed to pose immediate and serious risk of unnecessary damage to the environment.

## **3.3 OCCUPATIONAL HEALTH AND SAFETY REQUIREMENTS**

The Contractor is to take cognisance of the Occupational Health and Safety Act (Act 85 of 1993) and in particular the requirements of the Construction Regulations issued in July 2003.

## **3.4 MONITORING AND REPORTING**

The Principal Agent (or appointed person) shall monitor the site daily with respect to compliance with the specifications contained within this CEMP. The OM shall visit the site and verify minimum monthly during periods of active construction work that the specifications of this CEMP are complied with and provide the Developer, Principal Agent and DEA case officer with an inspection report.

## **3.5 ENFORCEMENT**

Serious and persistent repeat non compliances with the specifications of this CEMP shall be reported by the OM to the DEA case officer who shall take action in terms of the enforcement procedures of their department under the provisions of the National Environmental Management Act.

## **3.6 DISPUTE RESOLUTION**

Where any disputes or disagreements arise between the Principal Agent and the OM, specifically with regard to environmental management on Site and which cannot be resolved, then the matter will be referred to the case officer at DEA for clarification and their decision is binding on all parties.

## **3.7 CONTRACTUAL CONFLICTS**

In the event of any conflict occurring between the provisions of the CEMP and the project specifications contained within other project documentation, the terms within the CEMP shall take preference.

### **3.8 AUTHORITY INSPECTIONS**

Officials from DEA and other government officials such as Department of Labour inspectors, DWA, Heritage officials etc. shall be given access to the property for the purpose of assessing and/or monitoring compliance with the conditions contained in the Environmental Authorisations, issued permits or legislation, at all reasonable times provided that prior arrangements has been made with the farm manager.

A copy of the Environmental Authorisation (**Annexure 1 of the EMPr**) must be kept by the Principal Agent on the construction site at all times and must be produced to any authorised official of DEA who requests to see it.

### **3.9 COMMUNITY RELATIONS**

The Developer shall be responsible for responding to third party or public queries and/or complaints relating to construction operations and the dissemination of information to the community and the media (press releases etc).

### **3.10 SOCIAL RESPONSIBILITIES**

The Developer shall encourage and implement wherever possible the procurement of locally based labour, skills and materials.

### **3.11 REVIEW OF THE CEMP**

The project team is to assess the practicality and effectiveness of the CEMP and report any problems and suggested amendments to the OM. Any substantial changes, updates or upgrades of the CEMP must be approved by the OM and be sent by the OM to DEA within 14 days of such changes being made to the CEMP.

### **3.12 NOTIFICATION OF CONSTRUCTION START**

One week's notice, in writing, must be given to DEA, before commencement of the *initial* construction activity on the site (thus entrenching the EA within its validity period). This must be undertaken by the Developer or on his behalf by the appointed environmental consultant.

### **3.13 STRUCTURE OF MANAGEMENT SPECIFICATIONS**

The management specifications are set out as follows:

- 1. Legislated Requirements**  
Some of the most pertinent legislation, but not necessarily a comprehensive list, that applies to the each management section.
- 2. Background**  
Background to site specific conditions and/or the environmental impact being mitigated.
- 3. Objectives**  
What the management specifications are trying to achieve
- 4. Performance Indicators**  
Identifies indicators that demonstrate the level of compliance with a procedure.
- 5. Procedures**  
The actual management specifications that aim to avoid or mitigate potential environmental impacts.
- 6. Monitoring and Reporting**  
Describes the frequency and type of monitoring of each management section and how and in what forum this is reported on.
- 7. Responsibilities**  
Describes who is responsible for what in terms of implementing the management specifications.
- 8. Related Documents**  
Describes related documents that exist containing guidelines or requirements related to the environment.
- 9. Breach**  
Describes enforcement and remedial actions that apply in the case of a contravention with a management procedure/section in the CEMP.

### **3.14 MANAGEMENT SPECIFICATIONS**

The management specifications applicable to the construction phase of the development follow:



<b>EMPr SECT 3.14.</b>	<b>1. SITE ESTABLISHMENT</b>		
<b>Version no</b>	01	<b>Date</b>	May 2013
<b>1. Legislated requirements</b> <ul style="list-style-type: none"> <li>• National Environmental Management Act (No 107 of 1998)</li> <li>• Occupational Health and Safety Act (No 85 of 1993)</li> </ul>			
<b>2. Background</b> <ul style="list-style-type: none"> <li>• A temporary construction site camp is required during the construction phase.</li> <li>• A lay down and workshop/storage area will be required to accommodate the civil engineering components.</li> </ul>			
<b>3. Objectives</b> <ul style="list-style-type: none"> <li>• Plan construction methods that result in the least possible negative environmental impact and document these as Environmental Method Statements.</li> <li>• Increase compliance with the environmental specifications contained in the CEMP by raising awareness of the requirements in environmental awareness training courses at all staff levels.</li> <li>• Minimize environmental impact by siting the site camp elements in areas where they have the least possible negative environmental impact whilst still being practical to the works.</li> <li>• Provide staff welfare facilities including toilets, drinking water and eating areas.</li> </ul>			
<b>4. Performance Indicators</b> <ul style="list-style-type: none"> <li>• All environmental method statements are provided by the Contractor prior to commencing with the activities governed by such method statements and are kept on file on site.</li> <li>• Environmental awareness training registers are on file on site.</li> <li>• The site camp is located in the approved position and its footprint minimized and demarcated with fencing, with no undue avoidable environmental impact e.g. storm water drainage, visual impact etc.</li> <li>• Adequate toilet facilities are provided and are maintained in a hygienic condition. No spillage of content of chemical toilets on the site.</li> <li>• Eating areas and drinking water provided to site staff in an easily accessible position.</li> </ul>			
<b>5. Procedures</b> <p><b>A. Method Statements</b></p> <ul style="list-style-type: none"> <li>• The Contractor shall provide all environmental method statements requested in writing by the OM for the OM's approval a minimum of 7 days prior to commencing with the activity addressed in each method statement.</li> <li>• Approved Method Statements shall be readily available on the Site and shall be communicated to all relevant personnel and sub-contractors. The Contractor shall carry out the works in accordance with the approved Method Statement.</li> <li>• The following method statements are required by the OM (not an exclusive list):</li> </ul> <p><b>Site camp and site division</b> The location, layout and method of establishment of the construction camp (including all buildings, offices, access routes, lay down yards, fuel storage areas, batching areas and other infrastructure required for the running of the project).</p> <p><b>Vegetation clearing</b> Method of vegetation clearing during site establishment and disposal procedure for cleared material. Include an animal search and rescue program.</p> <p><b>Fuel storage and use</b> The design, location and construction of the fuel storage area (if required), service areas as well as for the filling and dispensing from storage tanks and management of drip trays.</p> <p><b>Restriction of working areas</b> Identification of all no-go areas on plan. The position, type and height of all permanent and temporary fencing / pegging required</p>			

for the demarcation of working and protected (“no-go areas”) areas respectively. Include a program of installation.

**Waste management**

Expected solid and liquid waste types, quantities, methods and frequency of collection and disposal as well as location of disposal sites. Include a recycling programme as part of a Waste Management Plan.

**Hazardous substances (if applicable)**

Details of any hazardous substances / materials to be used (other than fuels and cement which are dealt with in separate method statements) together with the transport, storage, handling and disposal procedures for the substances.

**Cement and concrete batching**

Location, layout and preparation of concrete batching areas including the methods employed for the mixing and handling of cement products and particularly the containment of excessive runoff and waste water from such areas. The method of transportation of concrete, cleaning of ready mix truck chutes, and containment of cement dust associated with bulk silos (if applicable) etc.

**Emergency procedures**

Emergency procedures for fire, flooding and accidental leaks and spillages of hazardous substances (including fuel/ oil). Include details of risk reduction measures to be implemented including fire fighting equipment, fire prevention procedures and spill kits (materials and compounds used to reduce the extent of spills and to breakdown or encapsulate hydrocarbons).

**Dust**

Details on the methods for managing dust on the site.

**Road/access maintenance**

Location of all access routes on plan and details of stabilisation and maintenance of roads including erosion protection and repair.

**Blasting (If and when applicable)**

Details on the methods for blasting on the site, including all safety procedures and minimising spread of fly-rock.

**Special environments**

Details on the methods for working in close proximity to the drainage lines or any protected vegetation, including demarcation of works area, stockpile locations and rehabilitation actions.

**B. Environmental Awareness Training**

- The principal contractor shall make his permanent site staff available to attend an environmental awareness presentation (approximately 45 mins long) presented by the OM to familiarize them with the environmental aspects of the CEMP.
- The contractor shall further to this present important environmental requirements (**per Appendix 2**) as part of the compulsory Health and Safety induction meetings presented to all new site staff and sub contractors that have not attended the OM’s training session. The OM reserves the right to present additional dedicated environmental inductions for the duration of the contract for any employees including sub contractor staff, should such additional lectures be deemed necessary by the OM i.e. in terms of poor compliance by a certain team, problem aspects or failure of the principal contractor to adequately present lectures.
- The contractor shall include training components dealing with prevention/management of HIV/AIDS, TB and alcohol and substance abuse avoidance into his staff training program.

**C. Site camp**

- The location of the Contractor’s construction site camp and material lay down areas shall be specifically discussed and approved in writing by the Principal Agent and the OM prior to establishment and shall take into account visual impact and the use of previously disturbed areas rather than areas with good natural vegetation cover (if any).
- The site camp shall be limited in area to only that which is essential and its extent shall be fenced for the duration of its lifespan on site.

**D. Toilets**

- A minimum of one chemical toilet for every 15-contract personnel **or alternatively 1 flush toilet for every 30 personnel**, is to be provided on site in any given work area. All employees on site shall have easy access to these facilities (within 100 meters of their work site). A trailer mounted toilet is to be considered to achieve such accessibility in work areas further away from the construction camp.
- Toilets must have doors and locks and portable chemical toilets shall be secured to prevent them from blowing over. Toilet paper

shall be provided.

- The Contractor shall ensure that suitable sanitation facilities are provided for and/or by all his sub-contractors on site.
- The Contractor shall keep the toilets in a clean, neat and hygienic condition and chemical toilets shall be serviced at least once per week.
- Chemical toilets are to be emptied prior to builder's holidays/temporary closure. The Contractor shall ensure that no spillage occurs when the toilets are cleaned or emptied and that the contents are removed from site. Discharge of waste from toilets into the environment and burial of waste is strictly prohibited.

**E. Drinking water**

- The Contractor shall ensure that drinking water is available for all staff on site. If no potable water source is available on site then the Contractor shall import drinking water to the site.

**F. Eating areas**

- If employees are to eat elsewhere on site other than in the camp area, the Contractor shall designate restricted, sheltered places for eating within the specified working areas. The Contractor shall provide adequate refuse bins with lids in all these places.

**G. Signage on site**

- Avoid any unnecessary signage on site.

**6. Monitoring and Reporting**

- The Contractor shall monitor the site daily with respect to compliance with the specifications.
- The OM shall monitor minimum fortnightly that the specifications are complied with and provide the Contractor and Principal Agent with an inspection report of any specifications not adequately complied with.
- The OM shall provide a monthly summary report of compliance to the project team and DEA.

**7. Responsibilities**

- The Contractor shall ensure compliance with these specifications.
- The OM shall be responsible for external monitoring and reporting regarding compliance with these specifications.
- The Principal Agent shall issue site instructions to the Contractor where required to address non compliance with the specifications.

**8. Related Documents**

- Refer to **Specification 19 (Enforcement)** of this CEMP.

**9. Breach**

- A penalty of R 500 - R2000/day applies for failure to keep dust levels down on access/haul road, or for failure to provide adequate toilet facilities in a hygienic condition, drinking water and eating areas for site staff.
- The cost of remediation plus a 20% value of the cost of remediation apply for a site camp located in an unapproved location where it results in negative environmental impacts.

EMPr SECT 3.14.	2. SITE CLEARANCE		
<b>Version no</b>	01	<b>Date</b>	May 2013
<p><b>1. Legislated requirements</b></p> <ul style="list-style-type: none"> <li>• National Environment Management: Air Quality Act (No. 39 of 2004)</li> <li>• National Heritage Resources Act (no. 25 of 1999)</li> <li>• National Environmental Management: Waste Act 59 of 2008</li> <li>• Occupational Health and Safety Act (No 85 of 1993) - Hazardous Substances Regulations</li> </ul>			
<p><b>2. Background</b></p> <ul style="list-style-type: none"> <li>• Vegetation clearance that will be required for the Construction Phase, will be limited to the development footprint.</li> </ul>			
<p><b>3. Objectives</b></p> <ul style="list-style-type: none"> <li>• No damage/disturbance of areas outside of the development footprint.</li> <li>• Rescue and relocate any animals impacted by site clearance activities.</li> <li>• Protecting topsoil on site. Avoiding erosion and maintaining storm water management systems.</li> <li>• Safe and responsible disposal of waste materials resulting from site clearance.</li> </ul>			
<p><b>4. Performance Indicators</b></p> <ul style="list-style-type: none"> <li>• Safe disposal certificates for hazardous materials cleared from the site.</li> <li>• No significant avoidable high fuel loads on site.</li> <li>• No injured animals as a result of site clearing.</li> <li>• Topsoil separated and conserved for re-use where feasible.</li> </ul>			
<p><b>5. Procedures</b></p> <p><b>A. Vegetation Clearance</b></p> <ul style="list-style-type: none"> <li>• The extent of the work site shall be clearly demarcated e.g. through the use of clearly visible pegs and made clear to staff prior to the commencement of site clearing works on the site to avoid clearing of vegetation beyond the development footprint.</li> </ul> <p><b>B. Animal Search and Rescue</b></p> <ul style="list-style-type: none"> <li>• Site staff shall carefully monitor site clearing activities and organise for the relocation of any animals that cannot move off on their own e.g. nesting birds, snakes etc. The contractor shall contact local nature conservation staff or the OM for advice if necessary.</li> <li>• Species and numbers of relocated animals shall be recorded and kept as part of the OMs records.</li> </ul> <p><b>C. Excavation and Trenching</b></p> <ul style="list-style-type: none"> <li>• During excavation and trenching activities, care is to be taken to ensure that the stockpiling of top material is kept separate from sub-soils.</li> <li>• Trenches and excavations are to be closed as soon as possible after services have been laid in them, to prevent them from posing safety hazards to people, traffic and animals and to prevent rainwater erosion.</li> <li>• Water that needs to be pumped from excavations shall be released in such a manner as to avoid erosion on the site..</li> </ul>			
<p><b>6. Monitoring and Reporting</b></p> <ul style="list-style-type: none"> <li>• The Contractor shall monitor the site daily with respect to compliance with the specifications.</li> <li>• The OM shall monitor minimum fortnightly that the specifications are complied with and provide the Contractor and Principal Agent with an inspection report of any specifications not adequately complied with.</li> <li>• The OM shall provide a monthly summary report of compliance to the project team and DEA.</li> </ul>			

**7. Responsibilities**

- The Contractor shall ensure compliance with these specifications.
- The Contractor's Health & Safety officer shall oversee the handling and disposal of hazardous materials such as petrol or diesel and provide a written report to the OM.
- The OM shall be responsible for external monitoring and reporting regarding compliance with these specifications.
- The Principal Agent shall issue site instructions to the Contractor where required to address non compliance with the specifications.

**8. Related Documents**

- Refer to **Specification 4 Restriction of Working Areas and Protection of Sensitive Features** and **Specification 5 (Housekeeping & Waste Management)** of this CEMP.
- Refer to **Specification 19 (Enforcement)** of this CEMP.

**9. Breach**

- A penalty of R 500 - R2000/day applies for failure to implement an adequate dewatering system resulting in erosion or sedimentation impacts, or maintaining an unreasonable significant fuel load on site due to failure to frequently dispose of wastes generated during site clearing activities.
- A penalty of R500 - 10 000 per incident applied to malicious or negligent harm to a wild animal encountered on site.
- The contractor shall be liable for the cost of replacement imported topsoil should he fail to separate and protect topsoil stripped from the site as directed by the Construction Contract.
- The cost of remediation plus a 20% value of the cost of remediation apply for a site camp located in an unapproved location where it results in negative environmental impacts.

EMPr SECT 3.14.	3. FUEL/FLAMMABLES STORAGE AND HANDLING		
Version no	01	Date	May 2013
<p><b>1. Legislated requirements</b></p> <ul style="list-style-type: none"> <li>• Occupational Health and Safety Act (No 85 of 1993) - Hazardous Chemical Substances regulations (25 August 1995)</li> </ul>			
<p><b>2. Background</b></p> <ul style="list-style-type: none"> <li>• It is expected that small quantities of diesel, petrol, solvents and other flammable substances are likely to be used on site.</li> <li>• Plant required during the earthworks phase is likely to be refuelled by mobile bowser on site. Some quantities of fuels/oils/grease be stored on site by the contractor.</li> </ul>			
<p><b>3. Objectives</b></p> <ul style="list-style-type: none"> <li>• Prevent spillage and undue fire risks associated with the storage and handling of fuels and other flammable substances.</li> </ul>			
<p><b>4. Performance Indicators</b></p> <ul style="list-style-type: none"> <li>• No spillages/spillages adequately treated.</li> <li>• Required drip trays in place.</li> <li>• Adequate storage facilities including approved location, ventilation, bunding and signage.</li> </ul>			
<p><b>5. Procedures</b></p> <p><b>A. Storage</b></p> <ul style="list-style-type: none"> <li>• All fuels/flammable substances are to be stored within a demarcated area in the Contractor's camp on site until new storage facility is complete.</li> <li>• The storage area and perimeter must be free of vegetation and be well away from buildings or combustible materials.</li> <li>• The Contractor shall ensure that all liquid fuels (petrol and diesel) and other flammable substances are stored in containers with lids, which are kept firmly shut. All containers must be in such a condition as to be reasonably safe from damage and to prevent leakage there from. The rated capacity of a tank/container must be able to accommodate expansion of the product contained therein due to the rise in temperature during storage.</li> <li>• Only empty and externally clean containers may be stored on the bare ground. Overhead fuel storage tanks and containers containing fuels as well as all empty and externally dirty containers shall be situated on a smooth and level impermeable surface (concrete floor) and must be contained within a bund wall. The impermeable lining shall extend to the crest of the bund and the volume inside the bund shall be equal to 110% multiplied (x) by the total capacity of all the storage containers/tanks. The floor of the bund must be sloped towards an oil trap or sump to enable any spilled fuel to be removed. A hydrocarbon absorption / remediation product approved by the Principal Agent and the OM shall be installed in the bund to reduce the risk of pollution.</li> <li>• The requirements for fuel storage and management as detailed in SANS 10089 part 1 and SANS 10131 must be implemented. The flammable liquid in the storage containers/tanks must be clearly identified and the flammable store must be identified by the words, "Flammable Store—Bewaarplek vir Vlambare Vloeistowwe—Isitoro Indawo Yokugcina Izixhobo Ezithatha Lula Umlilo", and the permissible quantity allowed within the flammable store indicated. A flammable store not be used for any purpose other than that indicated on the flammable substance certificate, unless it is not in use as a flammable store. The person in charge of a flammable store must ensure that the flammable store doors are kept locked when the store is not in use.</li> <li>• No smoking shall be allowed in the vicinity of the stores. Symbolic safety signs depicting "No Smoking", "No Naked Lights" and "Danger" are to be provided as per the relevant SANS code. Any electrical or petrol-driven pump shall be equipped and positioned, so as not to cause any danger of ignition of the product. Sufficient fire-fighting equipment/extinguishers must be provided in an easily accessible position and in close proximity to all areas used for the storage and / or handling of fuel and other flammable substances.</li> </ul> <p><b>B. Handling</b></p> <ul style="list-style-type: none"> <li>• All vehicles and equipment must be maintained in a good condition in order to minimise the risk of leakage and possible contamination of the soil or storm water by fuels, oils and hydraulic fluids.</li> <li>• All vehicles / plant requiring servicing, or which are parked on site overnight and found to leak oils, as well as any static plant e.g. generators and concrete mixers leaking fuels and oils, are to make use of a drip tray placed strategically to avoid incidental spillage of</li> </ul>			

oils and fuels onto the ground. Drip trays shall be inspected at least weekly (daily, if affected by rainwater) and appropriate mop up products used to remove spillages. In particular, drip trays shall be closely monitored during rain events to ensure that they do not overflow.

- Shutter oils are to be applied under controlled conditions to avoid accidental and incidental spillage. Proper brush or roller tools shall be provided for this application. Small or appropriately sized containers shall be provided for the application of decanted oil in order to minimize accidental spillage.
- A suitable leak proof container for the storage of oiled equipment (filters, drip tray contents and soiled mop-up products, oil changes, etc.) must be established.
- All fuel, oil or hydraulic fluid spills are to be reported to the Principal Agent and OM immediately and be treated according to the protocols for hydrocarbon spills detailed in **Specification 15 Emergency Management** of this CEMP.

#### **6. Monitoring and Reporting**

- The Contractor shall monitor the site daily with respect to compliance with the specifications.
- The OM shall monitor minimum fortnightly that the specifications are complied with and provide the Contractor and Principal Agent with an inspection report of any specifications not adequately complied with.
- The OM shall provide a monthly summary report of compliance to the project team and DEA.

#### **7. Responsibilities**

- The Contractor shall ensure compliance with these specifications.
- The OM shall be responsible for external monitoring and reporting regarding compliance with these specifications.
- The Principal Agent shall issue site instructions to the Contractor where required to address non compliance with the specifications.

#### **8. Related Documents**

- Refer to **Specification 15 Emergency Management** and **Specification 19 Enforcement** of this CEMP.

#### **9. Breach**

- A penalty of R 500 - R2000/day applies for poor flammable substances storage that is seen as potential fire risk and failure to treat significant spills.
- The cost of remediation plus a 20% value of the cost of remediation apply for significant fuel spills due to the Contractors negligence to comply with these specifications.

EMP SECT 3.14.	4. RESTRICTION OF WORKING AREAS AND PROTECTION OF SENSITIVE FEATURES		
Version no	01	Date	May 2013
<p><b>1. Legislated requirements</b></p> <ul style="list-style-type: none"> <li>• National Environmental Management Act (No 107 of 1998)</li> <li>• National Heritage Resources (Act No. 25 of 1999)</li> </ul>			
<p><b>2. Background</b></p> <ul style="list-style-type: none"> <li>• Aristeia Site - Archaeological material was found to cover the entire area in varying densities with the strip closest to the shore and the slightly higher-lying ground most dense and most sensitive. North of the high ground the area was less dense and of medium sensitivity with a strip of very limited archaeological remains in between and covering much of the proposed development site. The archaeology consisted of shell scatters and deflated middens and, in all likelihood, these extend beneath the surface in many areas.</li> <li>• Town Site – some features were identified to have historical significance and permits would be required for demolition</li> </ul>			
<p><b>3. Objectives</b></p> <ul style="list-style-type: none"> <li>• To avoid any damages to identified sensitive features and areas or safety risks areas, whether within or outside the development boundary and to minimise the potential for unnecessary disturbance to these.</li> </ul>			
<p><b>4. Performance Indicators</b></p> <ul style="list-style-type: none"> <li>• Sensitive features, safety risk areas and "no-go" areas are designated clearly by means of suitable demarcation fencing.</li> <li>• Sensitive features remain intact and undamaged</li> </ul>			
<p><b>5. Procedures</b></p> <ul style="list-style-type: none"> <li>• Before commencing any construction work, the Contractor shall, in order to prevent unauthorized movement of persons or vehicles outside designated working areas and access routes erect suitable demarcation fencing/pegs to indicate the boundaries of the works area/protected areas, as agreed with the Principal Agent and OM.</li> </ul> <p><b>A. Fencing Specification</b></p> <ul style="list-style-type: none"> <li>• Temporary or safety fencing shall (unless otherwise specified by the Principal Agent) consist of either ready fencing or alternatively wooden or metal posts at 3m centres with two plain wire strands tensioned horizontally at 500mm and 900mm from ground level. Commercially available danger tape shall be wrapped around the wire strands. The Contractor shall maintain the fence for the duration of the contract and ensure that the danger tape does not become dislodged and cause litter. Alternative fencing specifications are to be approved by the Principal Agent.</li> </ul> <p><b>B. Safety/Access Control fencing</b></p> <ul style="list-style-type: none"> <li>• Movement of vehicles and personnel, stockpiling, dumping or storage of equipment or materials outside the designated working areas (e.g. outside the boundaries of the site) termed as "no-go" areas, will not be permitted without written authorisation of the Principal Agent and OM.</li> </ul> <p><b>C. Heritage features</b></p> <ul style="list-style-type: none"> <li>• Test excavation by archaeologist (Aristeia Site)</li> <li>• Demolition permit for heritage features at Town site</li> <li>• Strict access control with the small space between the existing gravel road and the development footprint</li> <li>• All artifacts over 60 years of age and all fossils are protected by law. Should anything of an archaeological nature be found on site by the Contractor (or any other party), e.g. stone hand tools, remnants of old structures not previously visible, old ceramic shards, human remains etc, work is to be stopped in the area immediately, and the OM / Principal Agent notified. Failure to notify the OM of a find will result in a penalty. This aspect must be carefully explained to workers during the Environmental Education Programme undertaken by the OM.</li> <li>• The OM will advise on demarcation of this area and notify a relevant specialist (archaeologist specialising in Stone Age archaeology) to view material and ascertain whether further study of the area is required.</li> <li>• Should a specialist confirm a genuine artifact or fossil and recommend further study of the area, work in the applicable area is to</li> </ul>			



cease until further notice and SAHRA is to be informed immediately by the OM.

- Should any human remains be disturbed, exposed or uncovered during excavation, these shall immediately be reported the South African Police Service and, if suspected that the remains are older than 60 years, the SAHRA (tel 021 462 4502).
- The removal of discovered archaeological remains by a contracted archaeologist shall be at the Developer's expense.

#### **6. Monitoring and Reporting**

- The Contractor shall monitor the site daily with respect to compliance with the specifications.
- The OM shall monitor minimum fortnightly that the specifications are complied with and provide the Contractor and Principal Agent with an inspection report of any specifications not adequately complied with.
- The OM shall provide a monthly summary report of compliance to the project team and DEA.

#### **7. Responsibilities**

- The Contractor shall ensure compliance with these specifications. The Contractor's H&S Officer shall in particular ensure that there is adequate access control to potentially hazardous work areas by members of the public.
- The OM shall be responsible for external monitoring and reporting regarding compliance with these specifications.
- The Principal Agent shall issue site instructions to the Contractor where required to address non compliance with the specifications.

#### **8. Related Documents**

- Refer to **Specification 19 Enforcement** of this CEMP.

#### **9. Breach**

- A penalty of R 500 - R2000/day applies for failure to have adequate safety/protection fencing in place.
- A penalty of up to R20 000 applies for the damage of a retained sensitive feature e.g. tree, or discovered heritage feature depending on its estimated replacement/repair value.
- Alternatively the cost of repair plus a 20% value of the cost of remediation apply for damage of a protected feature.

EMPr SECT 3.14.	5. HOUSEKEEPING AND WASTE MANAGEMENT		
<b>Version no</b>	01	<b>Date</b>	May 2013
<p><b>1. Legislated requirements</b></p> <ul style="list-style-type: none"> <li>National Environmental Management: Waste Act (No. 59 of 2008)</li> <li>National Water Act (No. 36 of 1998) (protection of water resources)</li> <li>Occupational Health and Safety Act (No 85 of 1993) - Hazardous Chemical Substances Regulations</li> </ul>			
<p><b>2. Background</b></p> <ul style="list-style-type: none"> <li>Solid waste produced during the construction phase is mainly expected to be rubble, some cleared vegetation, construction material off cuts and packaging.</li> <li>Waste water is also expected, namely grey and foul water and contaminated water (e.g. with paint, oils, cement or other chemicals).</li> <li>NEMA Waste Act requires that the principal contractor produce a Waste Management Plan and records of the quantities of waste disposed vs. that re-used/recycled.</li> </ul>			
<p><b>3. Objectives</b></p> <ul style="list-style-type: none"> <li>Promote waste minimisation and recycling of waste generated on the site.</li> <li>Avoid litter and pollution.</li> <li>Comply with waste management legislation and achieve responsible waste management and record keeping during the construction phase.</li> <li>Safe and responsible disposal of waste materials resulting from construction.</li> </ul>			
<p><b>4. Performance Indicators</b></p> <ul style="list-style-type: none"> <li>No litter/dumping visible anywhere on the site.</li> <li>Good housekeeping - neat/safe stacking and storage.</li> </ul>			
<p><b>5. Procedures</b></p> <p><b>A. Waste Management Plan</b></p> <ul style="list-style-type: none"> <li>Waste shall be managed in the following order (as is required by the NEM Waste Act):             <ol style="list-style-type: none"> <li><b>Waste Elimination:</b> eliminate waste generation through efficient procurement, reduction in wasteful corrections due to poorly supervised work etc.</li> <li><b>Waste Reduction:</b> good storage and management of materials to avoid unnecessary breakage/contamination</li> <li><b>Waste Re-use on site:</b> reclaiming of materials otherwise considered as waste e.g. whole bricks and shutter ply out of the rubble stockpile.</li> <li><b>Waste Recycling/Recovery off-site</b> (<i>records required for verification</i>).</li> <li><b>Waste Disposal</b> to a licensed landfill site (<i>records required for verification</i>) after separation into general <i>versus</i> hazardous waste categories.</li> </ol> </li> </ul> <p><b>Figure 3: Waste Management Hierarchy</b> (Illustration from Envirowise, UK)</p>			

- The Contractor, taking the above into account, submits to the OM a Waste Management Plan. (Refer to **Appendix 5** of this CEMP for a template waste management plan form).

The Waste Management Plan entails the following:

- i. The contractor shall detail each waste anticipated to be produced during the project, anticipated quantities, the waste's classification (hazardous (incl. class) or non hazardous), the disposal method and any special precautions or legislative requirements for each waste type. This shall be reviewed a minimum of every 6 months to remain up to date.
- ii. Specific details as to the destination of each waste type including contact details.
- iii. Details of the system of waste sorting employed on site including separating hazardous from non hazardous wastes, separating recyclable from non recyclable wastes and sorting out re-useable materials, and providing labeled bins for these different waste types.

**B. General Housekeeping**

- The contractor is to keep all working areas and the site in general in a neat and tidy condition at all times, including neat and safe stacking and storage of materials and equipment, and management of waste materials at appropriate intervals. Refer also to Section 25 ("Housekeeping on Construction Sites") of the Construction Regulations (18 July 2003) of the Occupational Health and Safety Act.

**C. Refuse Control**

- The Contractor shall provide labourers to clean up refuse in the Contractor's camp and working areas daily.
- Litter and waste materials (excluding rubble and hazardous waste materials) shall be disposed of into bins. Bins shall be provided at all eating areas. The separation and recovery of recyclable materials is encouraged.
- The Contractor shall provide sufficient bins with lids on site to store the waste produced on a daily basis. Bins shall not be allowed to become overfull and shall be emptied a minimum of once weekly.
- The waste be temporarily stored on site in a central fenced waste area e.g. with ready fence panels or a waste skip with a shade cloth/netting roof cover where there is a risk of wind dispersal of litter across the site, and which the OM has approved. The Contractor shall then remove the refuse collected from the working areas from site at least once a fortnight to a licensed landfill site.
- Refuse must be disposed of at a licensed landfill site. The Contractor shall ensure that waste litter is not deposited by employees anywhere on the site except in refuse bins.

**D. Hazardous Waste**

- Petroleum, chemical, harmful and hazardous waste is to be temporarily stored in a sealed drum/s in a specifically designated area in the site store. This waste shall be disposed of at a licensed hazardous waste disposal site. Storage and disposal etc is also controlled through other relevant legislation, which must be complied with e.g. Hazardous Substances Act (No. 15 of 1973) and Occupational Health & Safety Act.

**E. Builders rubble**

- The Contractor shall provide labourers to clean up the Contractor's camp and working areas of rubble generated in the course of construction work at least once a week.
- Clean\* rubble shall be temporarily stockpiled in a waste skip or a central stockpile/s and shall be removed from site to a licensed landfill site as soon as it constitutes a practical load for removal (maximum 10 m<sup>3</sup>) and before temporary closure of the site or will be used as base layer for the construction of the berms.

\*No plastics, shrink-wrap, paint buckets or any other debris that does not constitute clean building rubble, shall be stored at such stockpile sites.

**F. Recycling**

- Wherever possible and practical, waste materials generated by construction shall be sorted per the categories below and recycled:
  - Paper / cardboard (significant quantities are generated during the fit-out phase)
  - Metals
  - Glass
  - Plastic (specific types only)
  - Organic waste (e.g. cleared vegetation)
  - Whole bricks (from rubble stockpile)

- Separate bins can be provided for on-site sorting into the above categories or if this proves difficult to manage, mixed recyclables can be sent to a reputable recycling contractor for sorting.
- Containers for such materials must be provided separate to general waste bins in the site camp and taken to the relevant depot when full. This aspect must be explained to the site staff during environmental awareness training sessions.

**G. Waste water**

- The Contractor shall prevent discharge of any waste water containing pollutants, such as cements, lime, chemicals and oils and fuels into any water sources (e.g. into the storm water system) or onto any adjacent land.
- Wash areas shall be placed and constructed in such a manner so as to ensure that the surrounding areas are not polluted. A Method Statement shall be required for all wash areas where hydrocarbon, hazardous materials and pollutants are expected. This includes, but is not limited to paint equipment and concrete batch plant cleaning.

**H. Record Keeping**

- The weight/volume of all solid waste types generated on site shall be recorded as well as the quantities disposed of via recovery, recycling and to landfill. Reports shall be accompanied by copies of the disposal receipts from the entity accepting the waste as verification.
- Hazardous wastes require safe disposal certificates.

**6. Monitoring and Reporting**

- The Contractor shall monitor the site daily with respect to compliance with the specifications.
- The OM shall monitor minimum fortnightly that the specifications are complied with and provide the Contractor and Principal Agent with an inspection report of any specifications not adequately complied with.
- The OM shall provide a monthly summary report of compliance to the project team and DEA.

**7. Responsibilities**

- The Contractor shall ensure compliance with these specifications.
- The OM shall be responsible for external monitoring and reporting regarding compliance with these specifications.
- The Principal Agent shall issue site instructions to the Contractor where required to address non compliance with the specifications.

**8. Related Documents**

- Refer to **Specification 19 Enforcement** of this CEMP.

**9. Breach**

- A penalty of R 500 - R2000/day applies for to any party causing significant dumping of waste/littering on the Site or creation of a health nuisance through inadequate storage/periodic removal, in addition to covering the costs of its removal.

EMP SECT 3.14.	6. CONCRETE AND CEMENT WORKS		
Version no	01	Date	May 2013
<b>1. Legislated requirements</b>			
<ul style="list-style-type: none"> <li>• National Water Act (No 36 of 1998) General Authorisation section 3.7 (disposal of effluent to natural water sources via storm water)</li> </ul>			
<b>2. Background</b>			
<ul style="list-style-type: none"> <li>• Cement powder has a high pH. Spillage of dry cement powder and concrete slurry has the potential to affect both soil and water pH adversely and impact the growth of certain plant species.</li> <li>• Careless handling of cement products resulting in spillage or contaminated runoff thus have detrimental effects on the surrounding environment.</li> </ul>			
<b>3. Objectives</b>			
<ul style="list-style-type: none"> <li>• Prevent contamination of the soil and contamination of storm water run-off from the site.</li> <li>• Prevent visual impacts caused by concrete spillage in non target areas.</li> </ul>			
<b>4. Performance Indicators</b>			
<ul style="list-style-type: none"> <li>• No evidence of spilled waste concrete anywhere on or off site as a result of the contractor's activities.</li> </ul>			
<b>5. Procedures</b>			
<ul style="list-style-type: none"> <li>• Cement is to be stored in a secure weatherproof location to avoid contamination of the environment.</li> <li>• Concrete batching is to be avoided in "no-go" areas, future landscape areas and is prohibited on finished road/floor surfaces. Cleaning of equipment and flushing of mixers shall not result in pollution of the surrounding environment: Mortar boards and mixing trays must be used at all significant mixing and supply points to prevent costly wastage of the materials, contamination of soils and increased cleaning requirements and all runoff from batching areas shall be strictly controlled and kept localised.</li> <li>• Ready mix trucks shall not clean out hoppers on site unless the concrete waste and wash water is directed to an impermeable sump created on site for this purpose.</li> <li>• All visible remains of excess concrete shall be physically removed to a licensed landfill site on completion of the plaster or concrete pour section and disposed of. All excess aggregate shall also be removed.</li> </ul>			
<b>6. Monitoring and Reporting</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall monitor the site daily with respect to compliance with the specifications.</li> <li>• The OM shall monitor minimum fortnightly that the specifications are complied with and provide the Contractor and Principal Agent with an inspection report of any specifications not adequately complied with.</li> <li>• The OM shall provide a monthly summary report of compliance to the project team and DEA.</li> </ul>			
<b>7. Responsibilities</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall ensure compliance with these specifications.</li> <li>• The OM shall be responsible for external monitoring and reporting regarding compliance with these specifications.</li> <li>• The Principal Agent shall issue site instructions to the Contractor where required to address non compliance with the specifications.</li> </ul>			
<b>8. Related Documents</b>			
<ul style="list-style-type: none"> <li>• Refer to <b>Specification 19 Enforcement</b> of this CEMP.</li> </ul>			
<b>9. Breach</b>			
<ul style="list-style-type: none"> <li>• A penalty of R 500 - R1000/incident applies for avoidable concrete spillage on site causing pollution (soil or water) or damage to features.</li> <li>• The cost of remediation plus a 20% value of the cost of remediation apply for pollution or damage incidents related to poor concrete handling.</li> </ul>			

*Hondeklip Bay Abalone Farm  
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EMP SECT 3.14.	7. WATER USE		
<b>Version no</b>	01	<b>Date</b>	May 2013
<b>1. Legislated requirements</b>			
<ul style="list-style-type: none"> <li>• National Water Act (No 36 of 1998)</li> </ul>			
<b>2. Background</b>			
<ul style="list-style-type: none"> <li>• Water is a limited resource and it must be used efficiently.</li> </ul>			
<b>3. Objectives</b>			
<ul style="list-style-type: none"> <li>• Use water in a responsible way in the site to minimize consumption and prevent wastage of this limited resource.</li> <li>• Prevent unauthorised water abstraction e.g. via unmetered/unauthorised boreholes.</li> </ul>			
<b>4. Performance Indicators</b>			
<ul style="list-style-type: none"> <li>• No visible water leaks.</li> <li>• No unauthorised boreholes established on site.</li> <li>• No undue water wastage observed.</li> </ul>			
<b>5. Procedures</b>			
<b>A. Wastage</b>			
<ul style="list-style-type: none"> <li>• Wastage of water shall be avoided at all times. Only proper hoses and fittings in good repair shall be used on site. All taps shall remain properly closed when not in immediate use and all broken pipes / fittings shall be isolated immediately and repaired as soon as possible.</li> <li>• Where possible recycle water on the construction site.</li> </ul>			
<b>B. Prevention of Water Pollution</b>			
<ul style="list-style-type: none"> <li>• The pollution of surface or ground water shall be prevented. Such pollution could result from the release, accidental or otherwise, of chemicals, oils, fuels, sewage, water from excavations, construction water, water carrying soil particles or waste products etc.</li> <li>• Water sampling and analysis be required if the Principal Agent or OM have reason to believe that an activity on site have resulted in harmful effluent, or if storm water is believed to be contaminated by the Development (<b>refer to Appendix 4</b> of this CEMP).</li> </ul>			
<b>6. Monitoring and Reporting</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall monitor the site daily with respect to compliance with the specifications.</li> <li>• The OM shall monitor minimum fortnightly that the specifications are complied with and provide the Contractor and Principal Agent with an inspection report of any specifications not adequately complied with.</li> <li>• The OM shall provide a monthly summary report of compliance to the project team and DEA.</li> </ul>			
<b>7. Responsibilities</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall ensure compliance with these specifications.</li> <li>• The OM shall be responsible for external monitoring and reporting regarding compliance with these specifications.</li> <li>• The Principal Agent shall issue site instructions to the Contractor where required to address non compliance with the specifications.</li> </ul>			
<b>8. Related Documents</b>			
<ul style="list-style-type: none"> <li>• Refer to <b>Specification 19 Enforcement</b> of this CEMP.</li> </ul>			
<b>9. Breach</b>			
<ul style="list-style-type: none"> <li>• A penalty of R 500 - R2000/day applies for failure to repair leaks and avoid wastage of water.</li> <li>• Alternatively the estimated cost of the water wasted plus a 20% of this value apply.</li> <li>• A penalty of R 500 - R5000/incident applies for causing avoidable water pollution.</li> </ul>			

EMP SECT 3.14.	8. STORMWATER MANAGEMENT AND EROSION CONTROL		
<b>Version no</b>	01	<b>Date</b>	May 2013
<b>1. Legislated requirements</b>			
<ul style="list-style-type: none"> <li>• National Water Act (No 36 of 1998)</li> <li>• Conservation of Agricultural Resources Act (No 43 of 1983) Section 6</li> </ul>			
<b>2. Background</b>			
<ul style="list-style-type: none"> <li>• Construction activities frequently result in diversions of natural water flow resulting in concentration of flow and an increase in the erosive potential of the water.</li> </ul>			
<b>3. Objectives</b>			
<ul style="list-style-type: none"> <li>• Prevent contamination of storm water run-off from the site to prevent pollution of the receiving environments.</li> <li>• Prevent localised flooding on the site by ensuring that the storm water system/open furrows are not impeded e.g. through sediment build up and remains functional.</li> <li>• Prevent exacerbated erosion of drainage lines due to construction activities and services crossings and where possible improve the stability of the drainage channel in those places.</li> </ul>			
<b>4. Performance Indicators</b>			
<ul style="list-style-type: none"> <li>• No indication of erosion damage on the site.</li> <li>• No evidence of significant sediment deposition in the storm water system/drainage channels.</li> </ul>			
<b>5. Procedures</b>			
<ul style="list-style-type: none"> <li>• During construction the Contractor shall protect areas susceptible to erosion and water logging by installing necessary temporary and permanent drainage works as soon as possible and by taking other measures necessary to prevent the surface water from being concentrated in streams and from scouring slopes, stockpiles or areas off site.</li> <li>• Activities on the site e.g. dewatering, erosion must not lead to blockages or disruption of the storm water system/drainage channels. Earth, stone and rubble is to be properly disposed of so as not to obstruct natural water pathways over the site, i.e. these materials must not be placed in a storm water channel.</li> <li>• Any litter/foreign material are to be removed from the storm water channels and catch pits regularly so that function is maintained at all times.</li> <li>• Fuel and oil spills anywhere on site are to be treated immediately with an appropriate mop-up or bio-remedial products as directed by manufacturers to prevent contamination of runoff.</li> <li>• No cement, concrete, mortar, plaster etc. wastes or washings are to be disposed of anywhere on the Site.</li> <li>• No dumping of materials or waste to take place within or near storm water channels.</li> <li>• Any runnels or erosion channels developed on work sites during the construction period shall be backfilled and compacted, and the areas restored to a proper condition.</li> <li>• Stabilisation measures include: <ul style="list-style-type: none"> <li>➤ The packing of sandbags, straw bales or brush to reduce the speed of water flow where water is scouring the topsoil and results in the formation of erosion gullies.</li> <li>➤ The installation of water cut-off and flow channels.</li> <li>➤ Adequate protection of road/cable crossings across the drainage lines which improve stability at these points.</li> </ul> </li> </ul>			
<b>6. Monitoring and Reporting</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall monitor the site daily with respect to compliance with the specifications.</li> <li>• The OM shall monitor minimum fortnightly that the specifications are complied with and provide the Contractor and Principal Agent with an inspection report of any specifications not adequately complied with.</li> <li>• The OM shall provide a monthly summary report of compliance to the project team and DEA.</li> </ul>			
<b>7. Responsibilities</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall ensure compliance with these specifications.</li> <li>• The OM shall be responsible for external monitoring and reporting regarding compliance with these specifications.</li> </ul>			

- The Principal Agent shall issue site instructions to the Contractor where required to address non compliance with the specifications.

**8. Related Documents**

- Refer to **Specification 19 Enforcement** of this CEMP.

**9. Breach**

- A penalty of R 500 - R2000/day applies for failure to keep storm water catch pits clear of litter and to avoid contamination of storm water.
- The cost of remediation plus a 20% value of the cost of remediation apply in the case of environmental damage caused through failure to implement these specifications.



EMP SECT 3.14.	9. DUST CONTROL		
Version no	01	Date	May 2013
<b>1. Legislated requirements</b>			
<ul style="list-style-type: none"> <li>• NEM: Air Quality Act (No. 39 of 2004) (Dust)</li> </ul>			
<b>2. Background</b>			
<ul style="list-style-type: none"> <li>• The main causes of air pollution will be dust from vehicle movements and stockpiles and vehicle emissions.</li> <li>• Dust is a nuisance to staff and excessive dust poses a potential health risk.</li> </ul>			
<b>3. Objectives</b>			
<ul style="list-style-type: none"> <li>• Avoid/minimize wind-blown sand/dust problems and associated nuisance.</li> </ul>			
<b>4. Performance Indicators</b>			
<ul style="list-style-type: none"> <li>• No evidence of significant wind-blown sand/dust problems.</li> </ul>			
<b>5. Procedures</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall take appropriate measures to minimise the generation of dust as a result of construction works, operations and activities to the satisfaction of the OM and the Principal Agent.</li> <li>• Potentially erosive stockpiles shall be located in wind sheltered areas wherever possible or covered or stabilised appropriately. The use of potable water for dust suppression on stockpiles must be avoided.</li> <li>• Vehicle speeds shall not exceed 20km/h when traversing unconsolidated areas on site. Unpaved road/track surfaces be sprayed with water to suppress dust during construction activities.</li> <li>• Excavation, handling and transport of erodible materials shall be avoided under high wind conditions (excess of 45km/hr) when a visible dust plume is present.</li> <li>• Ensure that transported materials do not escape from the construction vehicles by providing adequate covering for all load beds.</li> <li>• Exposed unconsolidated surfaces shall be surfaced, re-vegetated or stabilised as soon as it is practically possible e.g. after earthworks is complete.</li> <li>• Stabilise disturbed areas, by lightly compacting the soil soon after completion.</li> <li>• Stabilised sand/soil stockpiles.</li> </ul>			
<b>6. Monitoring and Reporting</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall monitor the site daily with respect to compliance with the specifications.</li> <li>• The OM shall monitor minimum fortnightly that the specifications are complied with and provide the Contractor and Principal Agent with an inspection report of any specifications not adequately complied with.</li> <li>• The OM shall provide a monthly summary report of compliance to the project team and DEA.</li> </ul>			
<b>7. Responsibilities</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall ensure compliance with these specifications.</li> <li>• The OM shall be responsible for external monitoring and reporting regarding compliance with these specifications.</li> <li>• The Principal Agent shall issue site instructions to the Contractor where required to address non compliance with the specifications.</li> </ul>			
<b>8. Related Documents</b>			
<ul style="list-style-type: none"> <li>• Refer to <b>Specification 19 Enforcement</b> of this CEMP.</li> </ul>			
<b>9. Breach</b>			
<ul style="list-style-type: none"> <li>• A penalty of R 500 - R2000/day applies for failure to implement adequate dust control.</li> </ul>			

EMP SECT 3.14.	10. MATERIALS TRANSPORT AND STORAGE		
Version no	01	Date	May 2013
<b>1. Legislated requirements</b>			
<ul style="list-style-type: none"> <li>• Occupational Health and Safety Act (No 85 of 1993)</li> </ul>			
<b>2. Background</b>			
<ul style="list-style-type: none"> <li>• Proper storage, handling and transportation of materials brought onto or removed from site should be implemented.</li> </ul>			
<b>3. Objectives</b>			
<ul style="list-style-type: none"> <li>• To promote safety of workers and road users.</li> <li>• To keep roads clear of mud and lost materials.</li> <li>• To protect storm water systems and protected areas from the results of poor storage of materials.</li> </ul>			
<b>4. Performance Indicators</b>			
<ul style="list-style-type: none"> <li>• No evidence of materials falling or having fallen from the contractor's vehicles or those suppliers.</li> <li>• Roads shall be clear of mud, sand or other debris and storm water channels and drains shall not be blocked.</li> <li>• No evidence of materials stored within "no-go" areas.</li> </ul>			
<b>5. Procedures</b>			
<ul style="list-style-type: none"> <li>• No materials shall be stored in "no-go" areas, all soils compacted as a result of construction activities falling outside the development footprint areas should be ripped, profiled and monitored to ensure establishment of natural vegetation.</li> <li>• Material stockpiles (e.g. topsoil, sand and stone) must be protected against wind and water erosion (for prevention of dust, clogging of the storm water system and other problems).</li> <li>• The Contractor is to ensure that all vehicles are in a road-worthy condition. No loose materials may be transported without the load being secured under a tarpaulin or similar, in order to prevent possible danger to other road users from materials falling from the back of vehicles.</li> <li>• Any materials, which have in fact fallen from a vehicle despite precautions, must be cleared from the road by the Contractor immediately and removed (as opposed to just leaving them on the side of the road).</li> <li>• Mud and sand or any other debris deposited onto surfaced public roads by construction activities shall be cleared immediately. This shall be removed off the road surface and not be pushed to the side of the road causing blockage of storm water channels and drains.</li> </ul>			
<b>6. Monitoring and Reporting</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall monitor the site daily with respect to compliance with the specifications.</li> <li>• The OM shall monitor minimum fortnightly that the specifications are complied with and provide the Contractor and Principal Agent with an inspection report of any specifications not adequately complied with.</li> <li>• The OM shall provide a monthly summary report of compliance to the project team and DEA.</li> </ul>			
<b>7. Responsibilities</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall ensure compliance with these specifications.</li> <li>• The OM shall be responsible for external monitoring and reporting regarding compliance with these specifications.</li> <li>• The Principal Agent shall issue site instructions to the Contractor where required to address non compliance with the specifications.</li> </ul>			
<b>8. Related Documents</b>			
<ul style="list-style-type: none"> <li>• Refer to <b>Specification 19 Enforcement</b> of this CEMP.</li> </ul>			
<b>9. Breach</b>			
<ul style="list-style-type: none"> <li>• A penalty of R 500 - R2000/day applies for failure to keep roads clean and storm water channels open.</li> <li>• The cost of remediation plus a 20% value of the cost of remediation apply in the case of environmental damage caused through failure to implement these specifications.</li> </ul>			

EMP SECT 3.14.	11. HAZARDOUS MATERIAL HANDLING AND STORAGE		
Version no	01	Date	May 2013
<b>1. Legislated requirements</b>			
<ul style="list-style-type: none"> <li>• Hazardous Substances Act (No. 15 of 1973) and Hazardous Chemical Substances Regulations (August 1995).</li> </ul>			
<b>2. Background</b>			
<ul style="list-style-type: none"> <li>• Hazardous substances refer to substances scheduled in the Hazardous Substances Act (No. 15 of 1973) and Hazardous Chemical Substances Regulations (August 1995). These include fuels, oils, solvents, cement, pesticides, etc.</li> </ul>			
<b>3. Objectives</b>			
<ul style="list-style-type: none"> <li>• To ensure safe and proper storage, handling and disposal of hazardous substances on the site so as to avoid environmental pollution and human health risks.</li> </ul>			
<b>4. Performance Indicators</b>			
<ul style="list-style-type: none"> <li>• No pollution incidents reported or observed on the site.</li> <li>• Safe disposal certificates and relevant MSDS on the Contractor's site file.</li> </ul>			
<b>5. Procedures</b>			
<ul style="list-style-type: none"> <li>• All hazardous substances, as scheduled by the Hazardous Substances Act (No. 15 of 1973), shall be strictly handled, stored and disposed of as per the manufacturer's specifications. Material Safety Data Sheets (MSDS) for all hazardous materials used on site shall be available on the Contractor's environmental file for reference e.g. in first aid cases, to guide personal protective equipment use, to guide spill clean ups etc.</li> <li>• Sufficient care must be taken when handling hazardous substances to prevent pollution.</li> <li>• No hazardous substances may be disposed of on the site or into the sewer or storm water system. These shall be directed to a hazardous waste disposal site.</li> <li>• Hazardous materials such as fuel, oil, paint, herbicide and insecticides shall be stored in bermed areas or under lock and key, as appropriate, in a well-ventilated area.</li> </ul>			
<b>6. Monitoring and Reporting</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall monitor the site daily with respect to compliance with the specifications.</li> <li>• The OM shall monitor minimum fortnightly that the specifications are complied with and provide the Contractor and Principal Agent with an inspection report of any specifications not adequately complied with.</li> <li>• The OM shall provide a monthly summary report of compliance to the project team and DEA.</li> </ul>			
<b>7. Responsibilities</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall ensure compliance with these specifications.</li> <li>• The OM shall be responsible for external monitoring and reporting regarding compliance with these specifications.</li> <li>• The Principal Agent shall issue site instructions to the Contractor where required to address non compliance with the specifications.</li> </ul>			
<b>8. Related Documents</b>			
<ul style="list-style-type: none"> <li>• Refer to <b>Specification 3</b> Fuel/Flammables Storage and Handling and <b>Specification 19</b> Enforcement of this CEMP.</li> <li>• <b>Appendix 4</b> of this CEMP – list of example hydrocarbon spill response products</li> </ul>			
<b>9. Breach</b>			
<ul style="list-style-type: none"> <li>• A penalty of R 500 - R5000/incident applies for pollution to the environment caused by improper hazardous substances storage and handling.</li> <li>• A penalty of R R1000 - R8000 shall apply for failure to produce the required safe disposal certificates for hazardous waste removed from the site.</li> <li>• The cost of remediation plus a 20% value of the cost of remediation apply in the case of environmental damage caused through failure to implement these specifications.</li> </ul>			

EMP SECT 3.14.	12. ANIMALS ON SITE		
<b>Version no</b>	01	<b>Date</b>	May 2013
<b>1. Legislated requirements</b>			
<ul style="list-style-type: none"> <li>• Nature Conservation Ordinance, 1974 (Ordinance 19 of 1974) and Western Cape Nature Conservation Laws Amendment Act, 2000</li> </ul>			
<b>2. Background</b>			
<ul style="list-style-type: none"> <li>• The presence of fauna is expected to be limited to small mammals and reptiles that might become trapped on site.</li> </ul>			
<b>3. Objectives</b>			
<ul style="list-style-type: none"> <li>• Protect wild animals on the site by relocating them if required.</li> </ul>			
<b>4. Performance Indicators</b>			
<ul style="list-style-type: none"> <li>• No evidence of unduly disturbed or injured fauna.</li> </ul>			
<b>5. Procedures</b>			
<ul style="list-style-type: none"> <li>• If fauna is encountered on the site, they must not be trapped, captured, disturbed, injured or killed.</li> <li>• If not threatened, or causing a threat to anyone, the animal is to be left alone.</li> <li>• If threatened, or causing a threat e.g. a potentially venomous snake, a local conservation officer is to be contacted to undertake or advise on the capture of the animal and release thereof at a nearby conservation area.</li> </ul>			
<b>6. Monitoring and Reporting</b>			
<ul style="list-style-type: none"> <li>• The Contractor is to report any incidences of injured fauna to the OM.</li> <li>• The Contractor shall monitor the site daily with respect to compliance with the specifications.</li> <li>• The OM shall monitor minimum fortnightly that the specifications are complied with and provide the Contractor and Principal Agent with an inspection report of any specifications not adequately complied with.</li> <li>• The OM shall provide a monthly summary report of compliance to the project team and DEA.</li> </ul>			
<b>7. Responsibilities</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall ensure compliance with these specifications.</li> <li>• The OM shall be responsible for external monitoring and reporting regarding compliance with these specifications.</li> <li>• The Principal Agent shall issue site instructions to the Contractor where required to address non compliance with the specifications.</li> </ul>			
<b>8. Related Documents</b>			
<ul style="list-style-type: none"> <li>• Refer to <b>Specification 19 Enforcement</b> of this CEMP.</li> </ul>			
<b>9. Breach</b>			
<ul style="list-style-type: none"> <li>• A penalty of R500 – R10 000 per incident applies to malicious or negligent harm to fauna encountered on site.</li> </ul>			

EMP SECT 3.14.	13. NOISE, NUISANCE AND LIGHTING CONTROL		
Version no	01	Date	May 2013
<b>1. Legislated requirements</b>			
<ul style="list-style-type: none"> <li>• Occupational Health and Safety Act (No 85 of 1993)</li> <li>• National Environmental Conservation Act (1989) Section 25 (noise regulations)</li> <li>• South African National Standard 10103 (2008) <i>'the measurement and rating of environmental noise with respect to annoyance and to speech communication'</i>.</li> </ul>			
<b>2. Background</b>			
<ul style="list-style-type: none"> <li>• Noise and lighting nuisance is expected during the construction period, this will be temporary and is not considered to have a significant impact as there are no residential units/houses in close proximity of the development site.</li> </ul>			
<b>3. Objectives</b>			
<ul style="list-style-type: none"> <li>• Prevent excessive noise/lighting from creating a nuisance to surrounding land-users.</li> <li>• Prevent excessive noise from creating a health risk to site staff.</li> <li>• Restrict construction related activities to daylight hours as far as possible.</li> </ul>			
<b>4. Performance Indicators</b>			
<ul style="list-style-type: none"> <li>• No records/complaints of excessive noise/lighting creating a nuisance to surrounding members of the public.</li> </ul>			
<b>5. Procedures</b>			
<ul style="list-style-type: none"> <li>• Working hours are restricted to (unless otherwise stipulated by the Local Authority planning approvals): <ul style="list-style-type: none"> <li>➢ 07h00 to 18h00 Mondays to Fridays</li> <li>➢ 07h30 to 13h00 Saturdays</li> <li>➢ no work on Sundays and public holidays</li> </ul> </li> <li>• If works are to take place outside of normal working hours, the OM and the Principal Agent are to be notified. The Principal Agent will in turn make application for a noise exemption to the Local Authority of work done outside of normal working hours. If any work is undertaken outside normal working hours, disturbance to the surrounding residents or land users is to be prevented.</li> <li>• Appropriate directional and intensity settings are to be maintained on all hooters and sirens. No amplified music shall be allowed on site. In addition, vehicles' exhaust system silencers shall be correctly maintained and vehicles must not be used unnecessarily.</li> <li>• Noise levels exceeding 85dB shall only be permitted where approved by the Principal Agent or during an emergency situation.</li> <li>• Lighting shall not be unreasonably intrusive to neighbouring residents, disturb animals in the conservation area or traffic on the adjacent roads.</li> </ul>			
<b>6. Monitoring and Reporting</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall monitor the site daily with respect to compliance with the specifications.</li> <li>• The OM shall monitor minimum fortnightly that the specifications are complied with and provide the Contractor and Principal Agent with an inspection report of any specifications not adequately complied with.</li> <li>• The OM shall provide a monthly summary report of compliance to the project team and DEA.</li> </ul>			
<b>7. Responsibilities</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall ensure compliance with these specifications.</li> <li>• The OM shall be responsible for external monitoring and reporting regarding compliance with these specifications.</li> <li>• The Principal Agent shall issue site instructions to the Contractor where required to address non compliance with the specifications.</li> </ul>			
<b>8. Related Documents</b>			
<ul style="list-style-type: none"> <li>• Refer to <b>Specification 19 Enforcement</b> of this CEMP.</li> </ul>			
<b>9. Breach</b>			
<ul style="list-style-type: none"> <li>• A penalty of R 200 - R1000/hour applies for failure to adhere to working hours or other requirements of this specification causing significant disturbance to neighbouring residents/tenants. At least one written complaint is required to substantiate this.</li> </ul>			

EMP SECT 3.14.	14. FIRE MANAGEMENT		
<b>Version no</b>	01	<b>Date</b>	May 2013
<b>1. Legislated requirements</b>			
<ul style="list-style-type: none"> <li>• Veld and Forest Fire Act (No. 101 of 1998) (fire prevention/control)</li> <li>• Occupational Health and Safety Act (No.85 of 1993)</li> </ul>			
<b>2. Background</b>			
<ul style="list-style-type: none"> <li>• The site has very little in the way of vegetation on or adjacent to it that could pose a potential fire risk but stored flammables and combustible structures on site, plant operating on site and informal open fires outside of designated locations could give rise to fires.</li> </ul>			
<b>3. Objectives</b>			
<ul style="list-style-type: none"> <li>• Maintain the site so as to reduce the risk of fire.</li> <li>• Minimize air pollution (through unauthorised burning of wastes etc).</li> </ul>			
<b>4. Performance Indicators</b>			
<ul style="list-style-type: none"> <li>• No fires in unauthorized location (e.g. outside of site camp).</li> <li>• Firefighting equipment available, accessible and serviceable.</li> <li>• Fire response and evacuation plan available.</li> </ul>			
<b>5. Procedures</b>			
<b>A. Fire Prevention</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall take all reasonable and active steps to avoid increasing the risk of fire through their activities on site.</li> <li>• Open fires shall not be allowed on site and no exceptions should be made.</li> <li>• The Contractor shall ensure that the basic fire-fighting equipment is available on site. The Contractor shall supply the site with tested and approved firefighting equipment (minimum 2 X 9kg fire extinguishers).</li> <li>• All woody dead or waste plant material resulting from vegetation clearing is to be removed from the site within 6 weeks of cutting, to reduce unnecessary fuel loads.</li> <li>• The disposal of any material by burning is prohibited.</li> <li>• The Contractor shall be liable for all costs incurred by organisations sub-contracted to extinguish all fires started by any person(s) under their control. The Contractor shall be liable for all costs incurred to remediate burnt areas.</li> </ul>			
<b>B. Fire Response and Evacuation</b>			
<ul style="list-style-type: none"> <li>• A Fire Protection, Response and evacuation Plan is to be prepared by the Contractor and conveyed to all staff on the site. This shall identify: <ul style="list-style-type: none"> <li>➤ a Fire Officer for the site (this is usually the H&amp;S officer)</li> <li>➤ all potential fire hazards,</li> <li>➤ fire fighting equipment to be provided on site</li> <li>➤ procedure in case of a fire</li> <li>➤ a fire evacuation route and plan</li> <li>➤ Emergency contact numbers, including the number of the nearest fire fighting station.</li> </ul> </li> <li>• Key staff members will be trained to deal with the control of fire fighting equipment on site and to assist with evacuations as required.</li> <li>• All staff is to be familiar with the position of fire control equipment on site and response and evacuation procedures. This should be covered in the Contractor's/labour teams' H&amp;S inductions for all new site staff.</li> <li>• In the case of a fire occurring on site, the following actions are to be taken immediately: <ul style="list-style-type: none"> <li>• Contact the responsible person/manager.</li> <li>• Contact Local Fire Department/Fire Protection Association.</li> <li>• Warn residents and neighbours of potential danger.</li> </ul> </li> </ul>			

- Take whatever practical measures are required to bring the fire under control, prior to the fire department arriving on site, without prejudicing the safety of any of the staff.

**6. Monitoring and Reporting**

- The contractors H&S Officer shall ensure that all inductions and training is carried out to facilitate fire response and evacuation and shall ensure that all firefighting equipment inspection registers are up to date.
- The OM shall monitor minimum fortnightly that firefighting equipment is available and of undue fire risks observed and provide the Contractor and Principal Agent with an inspection report of any specifications not adequately complied with.
- The OM shall provide a monthly summary report of compliance to the project team and DEA.

**7. Responsibilities**

- The Contractor shall ensure compliance with these specifications.
- The OM shall be responsible for external monitoring and reporting regarding compliance with these specifications.
- The Principal Agent shall issue site instructions to the Contractor where required to address non compliance with the specifications.

**8. Related Documents**

- Refer to **Specification 15 Emergency Response** and **Specification 19 Enforcement** of this CEMP.

**9. Breach**

- A penalty of R 500 - R2000/day applies for failure to provide adequate firefighting equipment to site.
- The cost of remediation plus a 20% value of the cost of repair/remediation apply in the case of environmental damage caused through a fire caused by failure to implement these specifications.

EMPr SECT 3.14.	15. EMERGENCY MANAGEMENT		
<i>Version no</i>	01	<i>Date</i>	May 2013
<b>1. Legislated requirements</b>			
<ul style="list-style-type: none"> <li>• Occupational Health and Safety Act (No 85 of 1993) and its Construction Regulations (July 2003).</li> </ul>			
<b>2. Background</b>			
<ul style="list-style-type: none"> <li>• Emergency incidents have the potential to cause significant environmental damage and must be dealt with efficiently and effectively.</li> </ul>			
<b>3. Objectives</b>			
<ul style="list-style-type: none"> <li>• To facilitate efficient response to emergency situations that may arise on the site.</li> </ul>			
<b>4. Performance Indicators</b>			
<ul style="list-style-type: none"> <li>• Contractor emergency management and evacuation plans in place and up to date.</li> <li>• Hydrocarbon/chemical spill response products are on site.</li> <li>• Necessary fire fighting equipment on site.</li> </ul>			
<b>5. Procedures</b>			
<b>A. General</b>			
<ul style="list-style-type: none"> <li>• The emergency procedure and evacuation plan including telephone numbers of emergency services, the local fire fighting service, police and ambulance as well as contact details for site management shall be posted noticeably at the site office.</li> <li>• The contractor's safety officer is to present emergency procedures during the mandatory Health and Safety Induction presented to all new site staff.</li> </ul>			
<b>B. Fire</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall ensure that his employees are aware of the procedure to be followed in the event of a fire.</li> </ul>			
<b>C. Chemical/Fuel Spill</b>			
<ul style="list-style-type: none"> <li>• The site shall have a supply of absorbent material readily available to absorb any emergency hydrocarbon (fuel/oil) spills, and where possible be designed to encapsulate minor hydrocarbon spillage. The quantity of such materials shall be able to absorb / deal with a minimum of 200 litres of hydrocarbon liquid spill.</li> <li>• There are a number of products on the market, which are designed and suitable as absorbents and encapsulators of hydrocarbons (refer to <b>Appendix 4</b> of this CEMP for contact details of some of the possible suppliers).</li> <li>• Treatment and remediation of spill areas shall be undertaken to the satisfaction of the Principal Agent and OM.</li> <li>• In the case of a potentially hazardous chemical spill (hydrocarbon based or otherwise): <ul style="list-style-type: none"> <li>➢ The Principal Agent and OM shall be contacted and shall further ensure that,</li> <li>➢ The source of the spillage shall be isolated.</li> <li>➢ The spillage shall be contained using sand berms, sandbags, pre-made booms, and sawdust or other absorbent materials.</li> <li>➢ Cordon off and ensure safety of the spillage area.</li> <li>➢ A specialist cleanup/remediation service provider shall be contracted if required.</li> <li>➢ Mop-up/remediate the spillage site.</li> </ul> </li> </ul>			
<b>D. Flooding</b>			
<ul style="list-style-type: none"> <li>• Material stockpiles and equipment are to be kept outside of potential flood zones after heavy rains.</li> </ul>			
<b>6. Monitoring and Reporting</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall monitor the site daily with respect to compliance with the specifications.</li> <li>• The OM shall monitor minimum fortnightly that the specifications are complied with and provide the Contractor and Principal Agent</li> </ul>			



with an inspection report of any specifications not adequately complied with.

- The OM shall provide a monthly summary report of compliance to the project team and DEA.

**7. Responsibilities**

- The Contractor shall ensure compliance with these specifications.
- The OM shall be responsible for external monitoring and reporting regarding compliance with these specifications.
- The Principal Agent shall issue site instructions to the Contractor where required to address non compliance with the specifications.

**8. Related Documents**

- Refer to **Specification 19 Enforcement** of this CEMP.

**9. Breach**

- A penalty of R 500 – R2000/day applies for failure to provide spill response products or address the cause of flooding caused by the Contractor's activities.
- The cost of remediation plus a 20% value of the cost of remediation apply in the case of environmental damage caused through failure to implement these specifications.

EMP SECT 3.14.	16. SAFETY AND SECURITY		
Version no	01	Date	May 2013
<b>1. Legislated requirements</b>			
<ul style="list-style-type: none"> <li>• Occupational Health and Safety Act (No 85 of 1993) and its Construction Regulations (July 2003).</li> </ul>			
<b>2. Background</b>			
<ul style="list-style-type: none"> <li>• Construction work can be highly dangerous, with many lives put in danger and serious accidents occurring on the job. The contractor will be responsible for ensuring that proper access control is maintained on site.</li> </ul>			
<b>3. Objectives</b>			
<ul style="list-style-type: none"> <li>• To facilitate safety of staff and members of the public on/adjacent to the site.</li> </ul>			
<b>4. Performance Indicators</b>			
<ul style="list-style-type: none"> <li>• Access control in place and efficient.</li> </ul>			
<b>5. Procedures</b>			
<b>A. Safety</b>			
<ul style="list-style-type: none"> <li>• The safety of the public, residents and site staff during the works is of paramount importance. The work site is to be secured and access to the work sites by unauthorised persons is to be prevented by the Contractor, as far as is reasonably practical.</li> <li>• The Contractor has to ensure traffic safety at all times and has to implement safety measures for this purpose.</li> <li>• The Developer and Contractor are to take cognisance of the requirements of the Occupational Health and Safety Act No. 85 of 1993 and its relevant regulations, in particular the Construction Regulations dated July 2003.</li> </ul>			
<b>B. Security</b>			
<ul style="list-style-type: none"> <li>• With the exception of any security staff that is required to stay overnight, no personnel will be permitted to live on site. Security staff must be provided with heating and cooking facilities (in order that they do not need to light fires), access to toilet facilities and communication equipment.</li> <li>• Any security lighting provided by the Contractor is to be placed in such a way as to not cause a nuisance to residents of the area and traffic on adjacent roads.</li> </ul>			
<b>6. Monitoring and Reporting</b>			
<ul style="list-style-type: none"> <li>• The Contractor's H&amp;S officer shall monitor the site regularly with respect to compliance with the specifications and shall report to the Contract's Manager (and Principal Agent where required). This shall be verified by the Developer's external H&amp;S Agent's monthly report.</li> <li>• The OM shall report to the H&amp;S Officer any safety concerns that were observed during his/her site inspections.</li> </ul>			
<b>7. Responsibilities</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall ensure compliance with these specifications.</li> <li>• The Developer's H&amp;S Agent shall be responsible for external monitoring and reporting regarding compliance with these specifications (minimum monthly).</li> <li>• The Principal Agent shall issue site instructions to the Contractor where required to address non compliance with the specifications.</li> </ul>			
<b>8. Related Documents</b>			
<ul style="list-style-type: none"> <li>• Developer's H&amp;S specification and Contractor's H&amp;S Plan.</li> </ul>			
<b>9. Breach</b>			
<ul style="list-style-type: none"> <li>• Nil (to be addressed under H&amp;S management on site).</li> </ul>			

EMP SECT 3.14.	17. TEMPORARY SITE CLOSURE		
Version no	01	Date	May 2013
<b>1. Legislated requirements</b>			
<ul style="list-style-type: none"> <li>• Occupational Health and Safety Act (No 85 of 1993) and its Construction Regulations (July 2003).</li> </ul>			
<b>2. Background</b>			
<ul style="list-style-type: none"> <li>• Most building sites close for 3 weeks over builder's holiday's in December. Other factors also lead to temporary closure.</li> </ul>			
<b>3. Objectives</b>			
<ul style="list-style-type: none"> <li>• To ensure that the site is left in a safe, clean and stable condition at times when there is no management control for longer than a week/7days.</li> </ul>			
<b>4. Performance Indicators</b>			
<ul style="list-style-type: none"> <li>• Temporary closure reports submitted by OM and Contractor's H&amp;S Officer confirming all requirements are met.</li> </ul>			
<b>5. Procedures</b>			
<ul style="list-style-type: none"> <li>• If the site is closed for a period exceeding one week, a checklist procedure shall be carried out by the Contractor in consultation with the OM.</li> <li>• The Contractor's Safety Officer (in terms of the Occupational Health and Safety Act) is to check the site and report to the Principal Agent and OM regarding the following: <ul style="list-style-type: none"> <li>➢ Ensure fuel stores are as low in volume as possible, no leaks;</li> <li>➢ Fire extinguishers serviced and accessible;</li> <li>➢ Emergency and Management telephone numbers to be available and displayed;</li> <li>➢ All trenches and manholes closed and secured;</li> <li>➢ Fencing and barriers in place;</li> <li>➢ Security persons briefed and have facility for contact;</li> <li>➢ Fire hazards identified and minimized;</li> <li>➢ Material stockpiles secured;</li> <li>➢ Scaffolds secure;</li> <li>➢ Structures vulnerable to high winds secure.</li> </ul> </li> <li>• The OM is to check and report to the Principal Agent: <ul style="list-style-type: none"> <li>➢ Dust mitigation in place;</li> <li>➢ Slopes and stockpiles stabilized;</li> <li>➢ Fuels / hazardous substances stores secured and cleaned;</li> <li>➢ Materials stores secured;</li> <li>➢ Toilets empty and secured;</li> <li>➢ Refuse bins empty and secured and rubble removed;</li> <li>➢ No-go area fencing in place;</li> <li>➢ Drip trays empty &amp; secure (where possible).</li> </ul> </li> <li>• The Contractor is to ensure that all temporary closure requirements are met before leaving the site.</li> </ul>			
<b>6. Monitoring and Reporting</b>			
<ul style="list-style-type: none"> <li>• The Contractor's H&amp;S Officer and OM shall inspect the site prior to closure and complete the checklists required. Both shall provide written confirmation to the Principal Agent in this regard.</li> </ul>			
<b>7. Responsibilities</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall ensure compliance with these specifications.</li> <li>• The OM shall be responsible for external monitoring and reporting regarding compliance with these specifications.</li> <li>• The Principal Agent shall issue site instructions to the Contractor where required to address outstanding temporary closure issues.</li> </ul>			

**8. Related Documents**

- Refer to **Specification 19 Enforcement** of this CEMP.

**9. Breach**

- A penalty of R 500 – R5000/day applies for failure to address temporary closure requirements adequately, thus causing avoidable environmental management problems on site whilst the Contractor is off Site.

EMP SECT 3.14.	18. SITE CLEANUP AND REHABILITATION		
Version no	01	Date	May 2013
<b>1. Legislated requirements</b>			
<ul style="list-style-type: none"> <li>• National Environmental Management Act (No 107 of 1998) S28</li> </ul>			
<b>2. Background</b>			
<ul style="list-style-type: none"> <li>• Once construction activities are completed the contractor is to remove temporary site camps, containers, machinery and any other construction related materials from the site.</li> <li>• Due to low rainfall, high evaporation, windy conditions and thin topsoil layer of the region, successful vegetation regrowth and re-vegetation attempts following disturbance have generally been difficult. Preventative measures for damage to undeveloped areas are therefore crucial.</li> <li>• Rehabilitation would be limited to landscaped areas within the development footprint</li> </ul>			
<b>3. Objectives</b>			
<ul style="list-style-type: none"> <li>• Leave the site in a sound, neat, tidy and stable condition after construction works have been completed.</li> </ul>			
<b>4. Performance Indicators</b>			
<ul style="list-style-type: none"> <li>• No evidence of remaining wastes or excess materials on site.</li> <li>• No evidence of unrepaired damages caused by the Contractor's activities on site.</li> <li>• All required landscape rehabilitation undertaken.</li> <li>• No evidence of erosion or potential due to lack of stabilisation measures.</li> <li>• All outstanding environmental penalties paid by the Contractor.</li> </ul>			
<b>5. Procedures</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall ensure that all temporary structures, equipment, materials, waste and facilities used for construction purposes and not part of the permanent works is removed upon completion of the project. The site clean-up shall be to the satisfaction of the Principal Agent and the OM.</li> <li>• The Contractor shall be responsible for rehabilitating/repairing areas damaged by construction activities related to the project as identified by the OM and the Principal Agent.</li> </ul>			
<b>6. Monitoring and Reporting</b>			
<ul style="list-style-type: none"> <li>• The OM shall undertake an environmental closure inspection after the contractor has confirmed that works have been completed and provide the Contractor and Principal Agent with an inspection report of closure requirements not adequately complied with.</li> <li>• The OM shall provide a final environmental closure report to the project team and DEA after all outstanding issues have been addressed.</li> </ul>			
<b>7. Responsibilities</b>			
<ul style="list-style-type: none"> <li>• The Contractor shall ensure that all closure requirements are complied with.</li> <li>• The OM shall be responsible for external monitoring and reporting regarding compliance with these specifications.</li> <li>• The Principal Agent shall issue site instructions to the Contractor where required to address non compliance with the specifications.</li> </ul>			
<b>8. Breach</b>			
<ul style="list-style-type: none"> <li>• Failure to complete closure requirements will result in no environmental closure report being issued to the authorities.</li> </ul>			

EMP SECT 3.14.	19. ENFORCEMENT		
<i>Version no</i>	01	<i>Date</i>	May 2013
<b>1. Legislated requirements</b>			
<ul style="list-style-type: none"> <li>• The conditions of Authorization for this development in terms of the National Environmental Management Act (No. 107 of 1998).</li> </ul>			
<b>2. Background</b>			
<ul style="list-style-type: none"> <li>• Serious and persistent repeat non compliances with the specifications of this CEMP shall be reported by the OM to the DEA case officer who shall take action in terms of the enforcement procedures of their department under the provisions of the National Environmental Management Act.</li> </ul>			
<b>3. Objectives</b>			
<ul style="list-style-type: none"> <li>• To provide methods of enforcement to ensure that the provisions of this CEMP are implemented and to provide recourse for environmental damage.</li> </ul>			
<b>4. Performance Indicators</b>			
<ul style="list-style-type: none"> <li>• Penalty issue log kept by the Principal Agent.</li> <li>• Proof of payment of penalties by the Contractor.</li> </ul>			
<b>5. Procedures</b>			
<ul style="list-style-type: none"> <li>• Where the Contractor inflicts damage upon the environment or fails to comply with any of the environmental specifications contained within this CEMP, he shall be liable to pay a penalty for breach of the conditions of the environmental specifications which form part of the works contract.</li> <li>• The Contractor is deemed NOT to have complied with this Specification if: <ul style="list-style-type: none"> <li>➢ within the boundaries of the site, site extensions and haul / access roads there is evidence of contravention of the Specification;</li> <li>➢ environmental damage ensues due to negligence;</li> <li>➢ the Contractor fails to comply with corrective or other instructions issued by the Principal Agent/OM within a specific time;</li> <li>➢ the Contractor fails to respond adequately to complaints from the public</li> </ul> </li> <li>• Penalties shall be issued per incident for the Contractor's responsibility at the discretion of the Principal Agent in consultation with the OM.</li> <li>• The amount of the penalty shall be determined by the Principal Agent, in consultation with the OM. The Principal Agent shall inform the Contractor of the contravention and the amount of the penalty, and will deduct the amount from monies due under the Contract.</li> <li>• Payment of any penalties in terms of the contract shall not absolve the offender from being liable from prosecution in terms of any law.</li> <li>• The penalties listed under each of the specifications sections in this CEMP (not necessarily an exclusive list) shall be issued in addition to any remedial costs incurred as a result of non-compliance with the environmental specifications and shall be imposed by the Principal Agent on the Contractor for contraventions of the environmental specifications by individuals or operators employed by the Contractor and/or his sub-contractors. Where there are ranges, the amount shall depend on the severity and extent of the damage done to the environment:</li> <li>• For each subsequent similar offence committed by the same team or individual, the penalty shall be doubled in value to a maximum value of R20 000.</li> <li>• All monies collected through penalties shall be held by the Developer and be accounted for. A summary page is to be included with the monthly payment certificates as a record of penalties issued to date. <b>Penalty funds shall be allocated a suitable local environmental cause agreed upon by the Developer, Contractor and OM at the end of the contract and payment must be confirmed prior to environmental closure being granted for the project.</b></li> </ul>			
<b>6. Monitoring and Reporting</b>			
<ul style="list-style-type: none"> <li>• The OM shall monitor minimum fortnightly that the specifications are complied with and provide the Contractor and Principal Agent with a written warning of any specifications not adequately complied with. Failure to rectify the non compliance within the stipulated time frames in the written warning shall cause a penalty to be recommended to the Principal Agent.</li> <li>• The OM shall indicate all recommended penalties in the monthly environmental summary report issued to the project team and DEA.</li> </ul>			

- The Principal Agent shall account for all penalties issued and present these as part of the site meeting minutes.

**7. Responsibilities**

- The Contractor shall ensure that any issued penalties are paid.
- The OM shall be responsible for external monitoring and reporting regarding compliance with these specifications and recommend penalties accordingly after a warning letter and stipulated time frame to rectify the non compliance has been issued.
- The Principal Agent shall issue penalties to the Contractor in terms of breach with the Construction Contract, shall collect monies and ensure payment to the environmental cause identified at the end of the construction contract.

**8. Related Documents**

- The penalty clauses in the Construction Contract.
- Suggested penalties under each specification section.

### **3.15 FINANCING OF ENVIRONMENTAL CONTROL**

All aspects covered in this document shall be deemed to be included in the rates tendered by the Principal Contractor in his Schedule of Quantities. Some of the important cost items have been listed below to assist the contractor in making provision for implementation of the specifications:

#### **3.15.1 Site demarcation**

The supply, installation and removal at the end of the construction of all temporary fences e.g. to secure the site; demarcate unsafe or protected "no-go" areas as per the requirements of clause 3.14.4 of this CEMP.

#### **3.15.2 Protection of stock piles from blowing or washing away**

The covering of erodible stockpiles, including the cover material as required.

#### **3.15.3 Storage of fuel and oils**

The supply, construction, installation, transport, upkeep and removal of all facilities required for storage and management of fuel and oils. Include the supply of a spill response product per the requirements set out in 3.14.3.

#### **3.15.4 Contaminated water management**

The supply, construction, installation, transport, upkeep and removal of all facilities required for managing contaminated water e.g. cement mixer wash water, paint wash water and filtration and settlement during dewatering of excavations.

#### **3.15.5 Cement product management**

The supply, construction, installation, transport, upkeep and removal of all materials and facilities required for managing cement products during storage batching and handling.

#### **3.15.6 Storm water and flood management**

The supply, construction, installation, transport, upkeep and removal of all facilities required for managing storm water run-off from the site and protection of works from flooding.

#### **3.15.7 Supply of drip trays for stationary and "parked" plant**

The supply, installation, transport, upkeep and removal of all drip trays required.

#### **3.15.8 Dust management**

The supply, application, transport, upkeep and removal of all materials required to ensure that dust is adequately controlled e.g. straw stabilisation after earthworks is complete, water for un-surfaced roads and cover material for stockpiles.

#### **3.15.9 Solid waste management**

The supply, application, transport, upkeep and removal of all materials required to ensure that solid waste is adequately controlled (including a recycling program).

#### **3.15.10 Fire Control**

The supply, transport, upkeep and removal of all material required for fire control e.g. fire extinguishers.

#### **3.15.11 Staff attendance at the environmental awareness training course**

Staff attendance at the environmental training course. The sum shall cover all costs incurred by the Contractor in providing the venue and facilities as detailed in the Specifications and in ensuring the attendance of all relevant employees at the training.

#### **3.15.12 Eating areas**

The supply, construction, installation, transport, upkeep and removal at the end of the construction of all eating areas structures and facilities.

#### **3.15.13 Ablutions**

The supply, maintenance, regular emptying and removal of toilets.



**3.16 APPENDICES**

Appendices 1 – 5 follow:

**APPENDICES**

<b>Appendix 1</b>	<i>OM Checklists for CEMP Compliance</i>
<b>Appendix 2</b>	<i>Basic Environmental Education Content</i>
<b>Appendix 3</b>	<i>Method Statement Template</i>
<b>Appendix 4</b>	<i>List of Example Hydrocarbon Spill Response Products</i>
<b>Appendix 5</b>	<i>Waste Management Plan Template</i>

## **Appendix: 1**

### **OM Checklists for CEMP Compliance**

*Hondeklip Bay Abalone Farm  
Environmental Management Program (May 2013)*

<b>OM:</b>	<b>HONDEKLIP BAY, ABALONE FARM CEMP: START UP CHECKLIST</b>
	<b>DATE:</b>

CEMP	Item	Issue/Concern	Compliance			Comments
			Y	N	Part	
3.8	Admin	Environmental authorization kept in file on site				
		Contracts manger on site/ foreman has copy of CEMP on site and confirms that contents is understood and will be complied with				
3.14	Notification of construction start	DEA notified in writing 10 days before construction start				
3.14.1	Environmental education	Contract site staff attended an environmental induction or H&S induction with environmental component- register on file				
3.14.1	Method statements	All required MS including Waste Management Plan submitted & approved				
3.14.1	Contractor's camp	Setup in agreed location				
		Adequate toilets provided (1:15)				
		Adequate bins provided				
		Adequate eating area/s and drinking water provided				
		Adequate hydrocarbon spill response product on site in case of a spill				
		Provision of enough fire fighting equipment (extinguishers, etc.) on site				
3.14.1	Fuel storage area	Adequate fuel storage area assigned				
3.14.2	Search and rescue	Animals, plants/topsoil and animals rescued – ref rescue lists				
3.14.3	Restriction of working areas	All "no-go" area fencing in place				
		All facilities, materials inside approved working areas				

**Requirements to rectify non compliances and target dates:**

Non-compliance issue	Date to rectify

**OM confirms all start up requirements has been met:**

**OM:** \_\_\_\_\_ **Signed:** \_\_\_\_\_ **Date:** \_\_\_\_\_

*Hondeklip Bay Abalone Farm  
Environmental Management Program (May 2013)*

<b>OM:</b>	<b>HONDEKLIP BAY, ABALONE FARM CEMP: SITE CLOSURE CHECKLIST</b>
	<b>DATE:</b>

Item	Issue/Concern	Compliance			Comments
		Y	N	Part	
<b>Admin</b>	Environmental authorization complied with				
	Proof of payment of penalties				
	All waste management reporting on file?				
	Disposal receipts for hazardous material attached e.g. soiled hydrocarbon spill mop up products, etc				
<b>All temporary site facilities removed?</b>	Temporary toilets				
	Site area temporary fencing				
	Site containers/offices				
	Equipment and plant				
<b>Waste Removed?</b>	Excess materials				
	All wastes removed from site, final litter collection and cleanup undertaken				
<b>Rehabilitation undertaken?</b>	All oil/fuel spills remediated				
	Any chemical spillages/pollution mopped up				
	Any damage to features outside of the site repaired.				
	Any damaged landscaped areas rehabilitated?				
	All landscaping complete per plan.				
	All rescued/propagated plant material planted out?				
	All restoration of identified development off-set areas complete?				
<b>General</b>	Site clean and tidy?				
<b>Significant environmental incidents/compliance breaches</b>	<b>Describe incl. remedial actions:</b>				

**General comments:**

**Report attached:**

Yes	No
-----	----

**OM confirms all environmental closure requirements have been met:**

**OM:** \_\_\_\_\_

**Signed:** \_\_\_\_\_

**Date:** \_\_\_\_\_

*Hondeklip Bay Abalone Farm  
Environmental Management Program (May 2013)*

<b>OM:</b>	<b>HONDEKLIP BAY, ABALONE FARM CEMP: WEEKLY COMPLIANCE CHECKLIST</b>
	<b>DATE:</b>

CEMP	Item	Issue/Concern	Compliance			Comments
			Y	N	Part	
3.14.1	Site establishment	All environmental method statements approved by OM and on file on site				
		Environmental awareness training registers are on file on site				
		Site camp fenced, with no undue avoidable environmental impact on surrounding environment				
		Access routes/points in approved locations and maintained				
		Adequate toilet facilities, maintained in a hygienic condition				
		Eating areas and drinking water provided to site staff in an easily accessible position				
3.14.2	Site clearance	In approved areas only				
		Excavations checked for possible fossil/heritage finds				
		Plant & animal search and rescue, records available on file				
		Cleared vegetation stockpiles not on site for longer than 6 weeks				
		Topsoil separated and conserved				
		No burning of cleared vegetation on site				
		Neighbouring roads free of significant mud/debris				
3.14.3	Fuel/flammables storage and handling	Flammables stored in a demarcated area				
		No spillages or spillages adequately treated				
		Drip trays where necessary				
3.14.4	Restriction of working areas and protection of sensitive features	Sensitive features and "no-go" areas demarcated, fencing intact/undamaged				
		Controlled site access				
3.14.5	Housekeeping and waste management	Waste Management Plan in place				
		Waste disposal and recovery/recycling records on file verified with disposal receipts from the entity accepting the waste				
		No litter/dumping visible anywhere on the site				
		No food waste accessible to scavenging wildlife				
		Good housekeeping – neat stacking and storage				
		No contaminated waste water entering the storm water system				
3.14.6	Concrete and cement works	No concrete spillage noted anywhere on site				
		Adequate storage i.e. weatherproof container				
		Excess concrete removed off site				
3.14.7	Water use	No undue water wastage observed				
		No visible water leaks				
3.14.8	Storm water management and erosion control	No indication of erosion damage on Site				
		No evidence of contaminated storm water				
		Storm water channels free of significant litter, sediment, oil, paint residues and other contaminants				
3.14.9	Dust control	No evidence of significant wind-blown sand/dust				

*Hondeklip Bay Abalone Farm  
Environmental Management Program (May 2013)*

CEMP	Item	Issue/Concern	Compliance			Comments
			Y	N	Part	
		problems				
		Covered sand stockpiles where these show evidence of wind erosion				
		Dampened down/stabilised dirt vehicle tracks				
3.14.10	Materials transport and storage	No evidence of materials falling or having fallen from the contractor's/suppliers' vehicles				
		Roads shall be clear of mud, sand or other debris				
		No undue traffic congestion caused by the contractor's activities				
		No vehicles travelling in excess of 20km/hr on site				
		No materials are stored in "no-go" areas				
3.14.11	Hazardous material handling and storage	No pollution incidents reported or observed on the Site				
		Safe disposal certificates and relevant MSDS on the Contractor's site file				
		No hydrocarbon spillages or recorded spillages adequately treated				
		Adequate storage facilities for hazardous substances				
3.14.12	Animals on site	No evidence of unduly disturbed or injured wildlife				
		Problem animals dealt with correctly, calling on professional input where required				
		No evidence of traps/snares set on site				
		No evidence of food being left for wild animals on site (intentionally or unintentionally)				
3.14.13	Noise, nuisance and lighting control	Normal working hours are adhered to – no records/ complaints of noise nuisance to surrounding members of the public				
		Appropriate directional and intensity settings maintained on vehicles				
3.14.14	Fire management	No fires in unauthorized locations (e.g. outside of site camp)				
		No unauthorised burning of wastes on site				
		Fire fighting equipment available, accessible and serviceable				
		Fire response and evacuation plan available				
3.14.15	Emergency management	Contractor emergency management and evacuation plans in place and up to date				
		Hydrocarbon/chemical spill response products are on site				
		Telephone numbers of emergency services up at the site office				

**Requirements to rectify non compliances and target dates:**

Non-compliance issue	Date to rectify

OM: \_\_\_\_\_ Signed: \_\_\_\_\_ Date: \_\_\_\_\_

## **Appendix: 2**

### **Basic Environmental Education Content**



# Ecosense

Consulting Environmentalists/Ecologists  
Konsulerende Omsewinskundiges/Ekoloë

PO Box 12697  
Die Boord, 7613  
Phone/fax 021 8864056

## SHE Induction Training

Please add the following environmental awareness points as part of your SHE induction presentations to new staff at the **HONDEKLIP BAY, ABALONE FARM:**

### Basic Environmental Awareness:

1. **Why follow environmental site rules?**
    - Constitution of South Africa = “We have a right to a clean and healthy environment”. Preserve environment for future generations.
    - Rules form part of Construction phase Environmental Management Plan – legally binding thus fines, disciplinary action and even removal of staff from site for non-compliance.
  2. **No – Go Areas**
    - Stay out of restricted areas e.g. neighbouring properties. Fines for non-compliance!
  3. **Hazardous substances**
    - Hazardous substances to be used, handled and stored safely in accordance with instructions of the Material Safety Data Sheet.
    - **No** oils, fuels, paints or chemicals or polluted wash water or mop up products containing these to be thrown out on site or into storm water/sewer! Must be placed into sealed containers for removal from site.
  4. **Fire**
    - No fires and burning of wastes are allowed on site. No smoking in vegetated areas– high fire risk!
  5. **Waste Control**
    - Clean work areas daily. Waste must be disposed of in the bins provided on site.
    - Plastics and litter that can blow around shall **immediately** be put into bins.
    - All food waste into bins with scavenger proof lids.
    - Rubble to be kept in central stockpiles (max total 10m<sup>3</sup>) and regularly removed.
    - Do not mix clean rubble with rubbish!
    - Explain recycling programme.
  6. **Concrete**
    - All concrete mixing at dedicated plastic lined batching sites or in mortar trays. Concrete spills must be cleaned up immediately. **No concrete trucks wash out chutes on site unless special lined sump created!**
  7. **Public**
    - Be considerate of public nearby – limit noisy activities, traffic disruptions, inconsiderate parking.
  8. **Animals**
    - Report problem wild animals e.g. nesting birds, snakes or trapped or injured animals to site management for rescue. Do not feed any wild animal. Know first aid procedure in case of a snake bite.
  9. **Material storage/stockpiles**
    - Keep windblown sand down –maintain stockpile covers and screens.
    - **No stockpiling** outside of site/in no-go areas.
  10. **Vehicles and machinery**
    - Drip trays placed under leaking static plant e.g. pumps, generators, parked vehicles and during servicing and refuelling.
    - Report all leaking machinery and oil/fuel spills immediately. Spills to be treated and machinery to be fixed or remove from site.
  11. **Toilets**
    - Report blocked or leaking toilets. Keep toilets clean. Only use toilet paper!
  12. **Water wastage**
    - Do not waste water! Repair leaking hosepipes immediately and protect from damage / use correct fittings.
  13. **Archaeology**
    - Any suspected archaeological finds or human remains to be reported to site manager immediately and worked stopped in the area until further notice.
-



## **Appendix: 3**

### **Method Statement Template**



# Ecosense

Consulting Environmentalists/Ecologists  
Konsulerende Omgewingskundiges/Ekoloë

PO Box 12697  
Die Boord, 7613  
Phone/fax 021 8864056  
E-mail: [christine@ecosense.co.za](mailto:christine@ecosense.co.za)

## ENVIRONMENTAL METHOD STATEMENT

This Method Statement is to be completed by the person requiring the work to be undertaken (e.g. the Engineer or Contractor). This Method Statement will be assessed by the Operations Manager (OM) for potential negative impacts on the environment.

The Method Statement can only be implemented once signed off by the OM as being environmentally acceptable.

The person undertaking the work (the Contractor or his representative undertaking the works on the site) must also sign the Method Statement, thereby indicating that the works will be carried out according to the methodology contained in the approved Method Statement.

The OM will use the Method Statement to audit compliance by the Contractor with the requirements of the approved Method Statement.

Changes to the way the works are to be carried out must be reflected by amendments to the original approved Method Statement; amendments require the signature of the Engineer, denoting that the changed methodology or works are necessary for the successful completion of the works, and by the OM as being environmentally acceptable. The Contractor will also be required to sign the amended Method Statement thereby committing him/herself to the amended Method Statement.

This Method Statement MUST contain sufficient information and detail to enable the OM to apply his/her mind to the potential impacts of the works on the environment. The Contractor will also need to thoroughly understand what is required of him/her in order to undertake the works.

THE TIME TAKEN TO PROVIDE A THOROUGH, DETAILED METHOD STATEMENT IS TIME WELL SPENT. INSUFFICIENT DETAIL WILL RESULT IN DELAYS TO THE WORKS WHILE THE METHOD STATEMENT IS REWRITTEN TO THE OM'S SATISFACTION.

### WHAT work is to be undertaken?

(give a brief description of the works)

### WHERE are the works to be undertaken?

(where possible, provide an annotated plan and a full description of the extent of the works)

### WHEN are the works to start; what is the anticipated finish date?

**HOW are the works to be undertaken?**

(provide as much detail as possible – the ESM will assist as required)

**DECLARATIONS**

**8) ENVIRONMENTAL SITE MANAGER/OPERATIONS MANAGER**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactorily mitigated to prevent avoidable environmental harm:

\_\_\_\_\_

(signed)

(print name)

Dated:

**2) PERSON UNDERTAKING THE WORKS**

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement be amended on application to the above signatories and that the Environmental Site Manager will audit my compliance with the contents of this Method Statement

\_\_\_\_\_

(signed)

(print name)

Dated:

**3) APPROVING AUTHORITY**

The works described in this Method Statement are approved.

\_\_\_\_\_

(signed)

\_\_\_\_\_

(print name)

\_\_\_\_\_

(designation)

Dated:

## **Appendix: 4**

### **List of Example Hydrocarbon Spill Response Products**

**List of Example Hydrocarbon Spill Response Products and Suppliers**

It should be noted that this list is by no means exclusive, and that other bio-remediation measures and products should also be investigated.

<b>Spill Supply Services</b>	
<i>CONTACTS</i>	
Jerry Haldane	
Tel. (021) 948 6181	Tel. (021) 948 6181
Cell. 0828829006	Cell. 0828829006
<i>PRODUCTS</i>	
Spill Sorb (bales, booms, pads, mats and cushions) – hydrocarbon encapsulation	
Oil Gator – microbial bioremediation product for spills on soil and shale	
<b>Pinelands Environmental Technology</b>	
<i>CONTACTS</i>	
Chris Davidson	
Tel. (021) 531 3749/50	Fax. (021) 531 3903
Cell. 082 464 1074	
<i>PRODUCTS</i>	
Chemcap – Oil dispersant and degreaser	
<b>Enviroserv Waste Management (Pty)Ltd</b>	
<i>CONTACTS</i>	
(021) 951 8420	(021) 951 8440
<a href="mailto:info.ct@enviroserv.co.za">info.ct@enviroserv.co.za</a>	
<i>PRODUCTS</i>	
Wide range of spill kits and products	
<b>Zorbit Technologies Cape</b>	
<i>CONTACTS</i>	
Tel. (021) 534 6363	
<i>PRODUCTS</i>	
Peat Sorb – microbial bioremediation product for spills on soil and shale	

## **Appendix: 5**

### **Waste Management Plan Template**

<b>WASTE MANAGEMENT PLAN</b>		Document No.	WMP01
		Page No.	Page 1 of 3
		Revision	0
		Date.	
<b>HONDEKLIP BAY ABALONE FARM</b>			
<b>CONTRACTOR</b>		<b>Phone number</b>	
<b>Responsible person</b>		<b>E-mail</b>	

**A: WASTE MANAGEMENT PROCEDURE**

**1. Planning**

- a) All potential Waste Streams (generated during site establishment, construction and de-establishment) have been identified in the Waste Register below.
- b) The waste streams have been categorized into General and Hazardous waste. Hazardous waste has further been given a hazard rating if possible (SABS code/DWAF standards).
- c) The Waste Register will be reviewed every month for accuracy.

**2. Waste Register and Sorting Procedure**

a) Waste will be sorted into the following categories on site: *(e.g. clean rubble stockpiles, bins for different recyclables, hazardous wastes, wastes to landfill etc):*

WASTE TYPE	SORTING, SEPARATION AND STORAGE METHOD ON SITE

<b>WASTE MANAGEMENT PLAN</b>		Document No.	WMP01	
		Page No.	Page 2 of 3	
		Revision	0	
		Date.		
<table border="1" style="margin: auto;"> <tr> <td style="padding: 5px;"><b>HONDEKLIP BAY ABALONE FARM</b></td> </tr> </table>		<b>HONDEKLIP BAY ABALONE FARM</b>		
<b>HONDEKLIP BAY ABALONE FARM</b>				
<b>CONTRACTOR</b>		<b>Phone number</b>		
<b>Responsible person</b>		<b>E-mail</b>		

**3. Waste Storage/Handling on site**

a) Waste will be temporarily stored as follows: *(e.g. time on site, protection from weather, labeled bins/skips etc)*


**4. Destination of Waste/Recovery/Recycling Method**

WASTE TYPE	DISPOSAL TYPE (E.g. recovery/recycling/landfill)	DESTINATION (Incl contact details of receiver)



<b>WASTE MANAGEMENT PLAN</b>		Document No.	WMP01
		Page No.	Page 3 of 3
		Revision	0
		Date.	
<b>Morkels Cottages Development</b>			
<b>CONTRACTOR</b>		<b>Phone number</b>	
<b>Responsible person</b>		<b>E-mail</b>	


**5. Internal Monitoring Procedure**


**6. Document Control and Reporting Procedure (e.g. logging and reporting waste disposal receipts)**


**7. Training of staff (e.g. re on site sorting procedures etc.)**


**8. Other:**


NAME		
SIGNATURE		
DATE		

## 4 OPERATIONAL PHASE MANAGEMENT PLAN (OEMP)

This Operational Environmental Management Plan (OEMP) highlights key specifications applicable to Hondeklip Bay Abalone Farm.

### 4.1 INTERPRETATIONS

For the purposes of this OEMP the following abbreviations and definitions shall apply:

**Table 5: Abbreviations and definitions used in the OEMP**

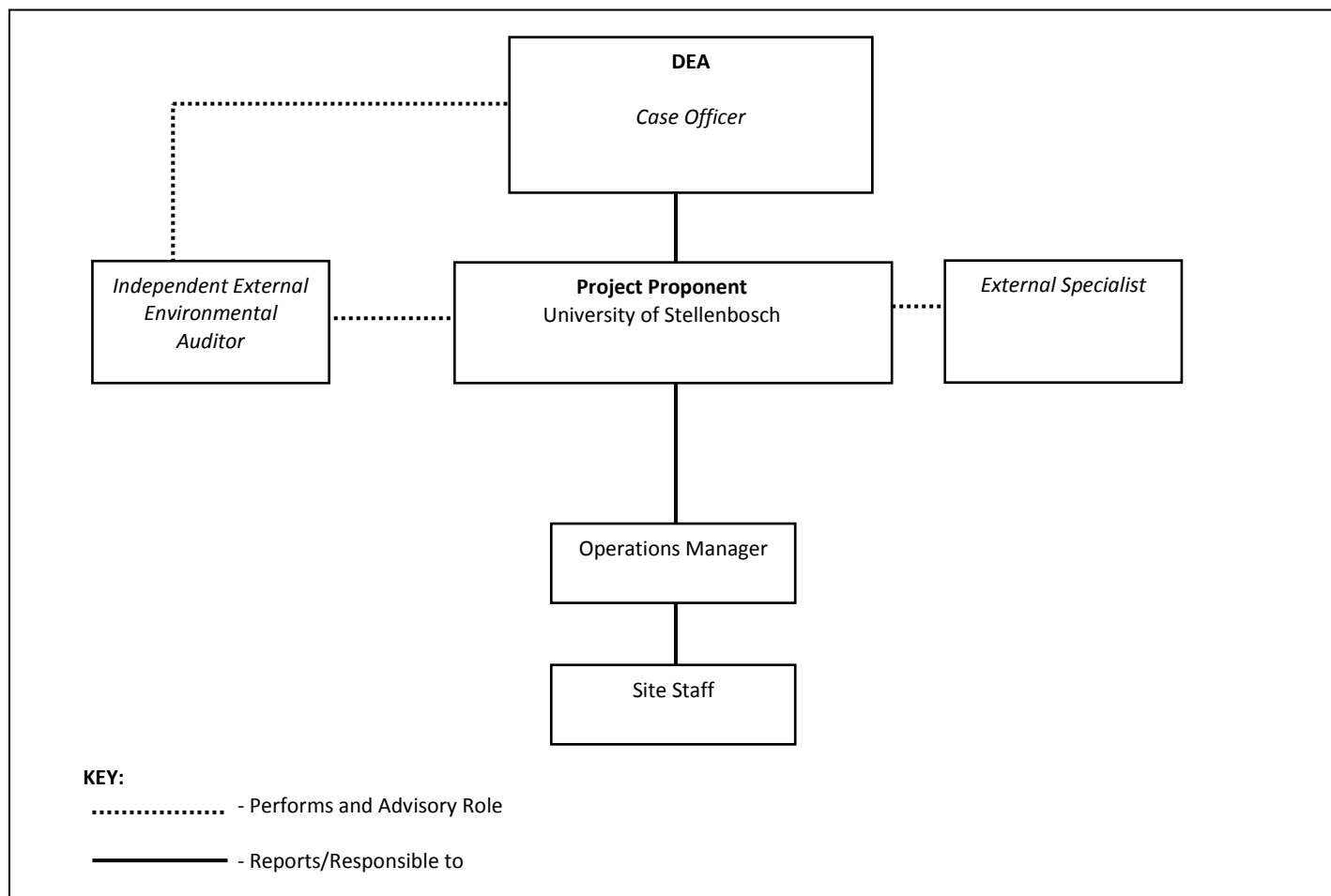
<b>CARA</b>	Conservation of Agricultural Resources Act (Act 43 of 1983)
<b>DEA</b>	Department of Environmental Affairs
<b>DWA</b>	Department of Water Affairs (formerly the Department of Water Affairs and Forestry)
<b>EA</b>	Environmental Authorisation – issued by DEA
<b>MSDS</b>	Material Safety Data Sheet
<b>OEMP</b>	Operational Phase Environmental Management Plan
<b>OM</b>	Operations Manager
<b>SAHRA</b>	South African Heritage Resource Agency – the statutory body responsible for heritage resource management

<b>Local Authority</b>	Kamiesberg Municipality
<b>Environment</b>	The aggregate of surrounding objects, conditions and influences that influence the life and habits of man or any other organism or collection of organisms.
<b>Environmental Management Plan</b>	Environmental management plans forming part of the overarching Environmental Management Program (EMPr), namely the Construction Phase Environmental Management Plan (CEMP), the Operational Phase Environmental Management Plan (OEMP) and the Decommissioning Environmental Management Plan (DEMP).
<b>Land Owner</b>	Department of Public Works
<b>“No-go” Areas</b>	Areas identified as being environmentally sensitive in some manner and delineated on plan which are out of bounds to unauthorised persons.
<b>Structure</b>	Means any man-made feature affixed to the ground or attached to something located on the ground, including but not limited to fences, walls, berms, levees, fill, storage tanks, shelters or buildings.
<b>Storm water</b>	Water resulting from natural precipitation and/or accumulation and includes rainwater, groundwater and spring water, but excludes water in a water or wastewater reticulation system.
<b>Topsoil</b>	The top 150 mm of soil; include vegetation and rocks

## 4.2 RESPONSIBILITIES AND ORGANISATIONAL STRUCTURE

The organisational structure for the Site is depicted in Figure 6 below.

**Figure 6: OPERATIONAL ENVIRONMENTAL MANAGEMENT ORGANISATIONAL STRUCTURE**



OEMP implementation responsibilities are detailed in Table 3 below (in addition to any other specific tasks allocated to these entities elsewhere in the EMPr):

**Table 3: Table of responsibilities**

DEA	University of Stellenbosch	Site Management	Site staff
<p>DEA as the approving authority for the project shall be responsible for:</p> <ul style="list-style-type: none"> <li>• Reviewing and approving any EMPr revisions;</li> <li>• Reviewing and proving external compliance reports; and,</li> <li>• Enforcement in the case of non-compliance</li> </ul>	<p>As the developer, University of Stellenbosch carry the overall responsibility for the implementation of this EMPr and all permit and legislative requirements related to the project operations.</p> <p>The developer shall further:</p> <ul style="list-style-type: none"> <li>• Ensure that adequate financing and staff are allocated for the implementation of the EMPr;</li> <li>• Appoint and finance any specialist inputs required (e.g. disease identification, abalone health, marine surveys);</li> <li>• Conduct an annual review of the EMPr and the applicability and suitability of the procedures;</li> <li>• Commission changes to the EMPr as required;</li> <li>• Appoint and pay an external auditor for the external environmental audits;</li> <li>• Submit the external audit report to DEA; and,</li> <li>• Liaise with DEA as required.</li> </ul>	<p>The Operations Manager oversees day to day operations and implementation of the EMPr on the project site.</p> <p>The Site Operations Manager is responsible for:</p> <ul style="list-style-type: none"> <li>• Providing training and mentoring for the operational staff;</li> <li>• Responding to incidents as they occur;</li> <li>• Completing the internal EMPr compliance checklist;</li> <li>• Regular internal review of the environmental procedures;</li> <li>• Facilitating the external environmental audit;</li> <li>• Maintaining a comprehensive filing system;</li> <li>• Conducting or commissioning the monitoring specified in this EMPr;</li> <li>• Submitting monitoring reports to the University of Stellenbosch, Department Science and Technology; and,</li> <li>• Liaising with the local communities.</li> </ul>	<p>The site staff is responsible for the actual physical work at the facility. They are responsible for:</p> <ul style="list-style-type: none"> <li>• Implementing the procedures of the EMPr; and,</li> <li>• Responding to incidents as they occur.</li> </ul>
<b>Independent External Environmental Auditor</b>		<b>Specialists</b>	
<p>External audits of the implementation of the EMPr are to be undertaken by a suitably qualified and experienced environmental consultant appointed by the developer. These audits are to be undertaken 6 monthly for the first 2 years and annually thereafter.</p> <ul style="list-style-type: none"> <li>• The Auditor shall:</li> <li>• Evaluate environmental management on site in terms of the requirements of the EMPr procedures,</li> <li>• Provide recommendations for improved environmental management on site,</li> <li>• Identify requirements of the EMPr which are no longer relevant or applicable,</li> <li>• Identify new environmental concerns on site, and provide additional management specifications, where required.</li> </ul>		<p>The inputs from various specialists be required at various stages in the operations. The results of these specialist investigations shall be incorporated into amendments to the EMPr as appropriate. These will be commissioned as required and could include:</p> <ul style="list-style-type: none"> <li>• Disease identification;</li> <li>• Population monitoring in the seeded sites;</li> <li>• Animal health monitoring on shore and in the sea;</li> <li>• Ecological surveys etc.</li> </ul>	

The requirements of this OEMP will come into effect after construction has been completed. Implementation of the OEMP will be the responsibility of all parties involved with the management of the Hondeklip Bay land-based abalone farm and associated infrastructure. The responsible parties are expected to co-operate closely to minimise or avoid unnecessary environmental impacts.

### **4.3 FINANCING OF ENVIRONMENTAL CONTROL**

Financing of environmental control requirements outlined in this document, as they relate to the operational management phase of the project, is the responsibility of the Land Owner unless where another party has been identified as the responsible party.

The Land Owner is to determine and allocate the required funding to ensure that all the environmental requirements can be implemented as required by the OEMP.

### **4.4 REVIEW OF OPERATIONAL PHASE EMP**

The OEMP document is to be reviewed by University of Stellenbosch on an annual basis for the first 3 years of implementation, and thereafter on a need basis to ensure that the environmental management requirements of the document remain relevant to the site conditions. During relevant years, the review of the OEMP is to take place directly after the external environmental audit has been completed, to allow for changes recommended by the auditor to be incorporated where appropriate.

The Department of Environmental Affairs is responsible for the final approval of any changes made to the OEMP. Such revisions shall be in the form of an amendment table which shows the original versus the updated clauses. Once approved by DEA, all parties affected are to make the agreed changes to the OEMP documentation, and management practices on site.

All such amendments to the OEMP will be in the form of a table in an Appendix, to be attached to the original document. DEA, Land Owner and any other individual or organization in possession of the document, are to be provided with a copy of any such appendices produced. These appendices are to provide a clear reference to which sections/specifications within the document have been updated.

### **4.5 MONITORING AND AUDITING**

The Land Owner will carry the responsibility of monitoring the implementation of the OEMP on site by all relevant parties, on an on-going basis.

External audits of the implementation of the OEMP are to be undertaken by suitably qualified and experienced environmental consultant appointed by the Land Owner. This audit is to be undertaken 1 year after commencement of the operational phase, 1 year after the first audit and 2 years after the second audit. The purpose of this exercise is not only to audit compliance with the environmental management requirements set out in this document, but also relevance of the OEMP to the site conditions and environmental management requirements at the time.

Following each audit, the Auditor is to produce an audit report for the Land Owner which:

- Evaluates environmental management on site in terms of the requirements of the OEMP,
- Provides recommendations for improved environmental management on site,
- Identifies requirements of the OEMP which are no longer relevant or applicable,
- Identifies new environmental concerns on site, and provides additional management specifications, where required.

The audit report is to be submitted by the Auditor to DEA for their records and information. This submission should include any proposed changes to the OEMP as contemplated in section 5.5 for DEA's approval.

The OEMP document must be updated during the review following the audit, to reflect the required changes in management practices.

### **4.6 MANAGEMENT SPECIFICATIONS**

The following environmental management specifications shall apply to the operational life of the project. Each one has a version number which shall be updated when the specific version is amended or revised.

An annotated list of the procedures is presented in Table 8 below. The procedures themselves are detailed in subsequent sub-sections.

**Table 8: Annotated list of specifications**

<b>Procedure No.</b>	<b>Procedure Name</b>	<b>Procedure topics</b>
1.	<b>Waste management</b>	<ul style="list-style-type: none"> <li>• Waste identification</li> <li>• Waste segregation               <ul style="list-style-type: none"> <li>○ Dead animals/ organic material</li> <li>○ Packaging waste</li> <li>○ Recyclables</li> <li>○ Non-recyclables</li> <li>○ Hazardous waste</li> <li>○ Outflowing sea water</li> <li>○ Waste sea water</li> <li>○ Sewage</li> </ul> </li> <li>• Waste storage</li> <li>• Waste labeling and handling</li> <li>• Waste disposal</li> </ul>
2.	<b>Materials handling</b>	<ul style="list-style-type: none"> <li>• MSDS</li> <li>• Labeling</li> <li>• Chemical storage, handling and disposal</li> <li>• Expired chemicals</li> </ul>
3.	<b>Infrastructure management</b>	<ul style="list-style-type: none"> <li>• Intake pipe</li> <li>• Sea water pump</li> <li>• Outflowing water sump</li> <li>• Outflowing water quality</li> <li>• Generator</li> <li>• Buildings (structure and external finish)</li> <li>• Conservancy tank</li> </ul>
4.	<b>Equipment maintenance</b>	<ul style="list-style-type: none"> <li>• Refueling boats</li> <li>• Engine repairs</li> <li>• Vehicle/ equipment service, maintenance and storage (leaks, drips etc.)</li> <li>• Other repairs/ maintenance</li> </ul>
5.	<b>Monitoring/ checking</b>	<ul style="list-style-type: none"> <li>• Ad hoc specialist monitoring               <ul style="list-style-type: none"> <li>○ Marine ecology (limited to seawater outflow)</li> <li>○ Disease</li> </ul> </li> <li>• EMPr monitoring/ checklist</li> <li>• External audit</li> <li>• Management review</li> </ul>
6.	<b>Storm water and erosion management</b>	<ul style="list-style-type: none"> <li>• Gutters</li> <li>• Exposed surfaces</li> <li>• Prevention and immediate repairs</li> </ul>
7.	<b>Housekeeping</b>	<ul style="list-style-type: none"> <li>• Ablutions</li> <li>• Eating areas</li> <li>• Bins</li> </ul>
8.	<b>Incident management</b>	<ul style="list-style-type: none"> <li>• Detection</li> <li>• Containment</li> <li>• Response</li> <li>• Review</li> <li>• reporting</li> </ul>
9.	<b>Alien vegetation management</b>	<ul style="list-style-type: none"> <li>• Early detection</li> <li>• Follow-up clearing as required</li> </ul>
10.	<b>Employment</b>	<ul style="list-style-type: none"> <li>• Local preference</li> <li>• Skills development</li> <li>• Training and toolbox talks</li> </ul>
11.	<b>Community liaison</b>	<ul style="list-style-type: none"> <li>• Forum</li> <li>• Staff sourcing</li> <li>• Feedback</li> </ul>
12.	<b>Record keeping</b>	<ul style="list-style-type: none"> <li>• List of records to be kept</li> </ul>
13.	<b>Reporting</b>	<ul style="list-style-type: none"> <li>• List of reporting requirements</li> <li>• List of report recipients</li> <li>• Details of expected responses to reports</li> </ul>

## **4.7 STRUCTURE OF MANAGEMENT SPECIFICATIONS**

The management specifications are set out as follows:

- 1. Responsibilities**  
Describes who is responsible for what in terms of implementing the management specifications.
- 2. Description of Activity**  
Background to site specific conditions and/or the environmental impact being mitigated.
- 3. Location of the Activity**  
Describes where the activity will occur.
- 4. Anticipated Environmental Impacts/Risks**  
Identifies the environmental risks associated with the activity/procedure.
- 5. Objective/Purpose of Mitigation Measures**  
What the management specifications are trying to achieve.
- 6. Procedure/Mitigation**  
The actual management specifications that aim to avoid or mitigate potential environmental impacts.
- 7. Monitoring and Reporting**  
Describes the frequency and type of monitoring of each management section and how and in what forum this is reported on.
- 8. Related Documents**  
Describes related documents that exist containing guidelines or requirements related to the environment.

<b>EMPr Sect 4.8.</b>	<b>1. Waste Management</b>		
<b>Version no</b>	01	<b>Date</b>	May 2013
<b>1. RESPONSIBILITIES</b>			
<b>Responsible person/s:</b>	Operational Manager		
	All staff		
<b>2. DESCRIPTION OF THE ACTIVITY</b>			
The following wastes are anticipated to arise from normal operations at the farm:			
<b>Waste type</b>	<b>Waste source</b>	<b>Waste characterisation</b>	
Spent oils, greases and fuels	Workshops and maintenance	Hazardous recyclable	
Paints and solvents	Infrastructure maintenance	Hazardous non-recyclable	
Scrap metal	Servicing and equipment maintenance	Non-hazardous recyclable	
Machine parts contaminated with oils/ grease of fuel	Workshops/ maintenance	Hazardous non-recyclable	
Dead animals, spoiled food, off-specification kelp	Grow-out areas	Non-hazardous non-recyclable	
Sewage	Ablutions	Hazardous non-recyclable	
Contaminated sea water	Grow out areas	Non-hazardous recyclable under the condition that no hazardous chemicals are included (detergents/ degreasers etc.)	
Wash water	All farm areas that use water for wash-down	Non-hazardous recyclable under the condition that no hazardous chemicals are included (detergents/ degreasers etc.)	
Food waste	Kitchens, staff facilities, and accommodation	Non-hazardous non-recyclable	
Expired chemicals. Pharmaceuticals	Grow out areas, laboratories, maintenance areas and workshop	Dependant on the nature of the substance.	
Soil contaminated with oil or fuel from a spill	Yard areas	Hazardous recyclable	
Packaging	Packing areas and general stores	Mostly non-hazardous recyclable	
Bottles, cans and plastic containers	The entire farm	Mostly non-hazardous recyclable except when they have contained a hazardous substance such as a pharmaceutical etc.	
Paper	Offices	Non-hazardous recyclable	
Toner cartridges	Offices	Hazardous non-recyclable but be re-usable	
Fluorescent tubes and compact fluorescent tubes	Offices and production areas	Hazardous non-recyclable	
Electronic and electrical equipment	Offices and workshops	Hazardous recyclable/ hazardous non-recyclable	
<b>3. LOCATION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>• The majority of the wastes will be produced on land – any wastes produced on the boats must be brought on land and dealt with according to this procedure.</li> </ul>			



#### 4. ANTICIPATED ENVIRONMENTAL IMPACTS/RISKS

- Pollution of the soil, surface and ground water;
- Pollution of the near shore marine environment;
- Disruption of intertidal marine ecosystems;
- Human health impacts and/ or nuisance;
- Contamination of the abalone stocks;
- Contravention of environmental legislation.

#### 5. OBJECTIVE/PURPOSE OF MITIGATION MEASURES

To:

- Prevent pollution;
- Maximise recycling and re-use and minimise landfill disposal; and,
- Compliance with legislation.

#### 6. PROCEDURE/MITIGATION

The following actions will be implemented to avoid the generation of waste –

- NOTE : Outflow and near shore environment – The planned production is below the activity threshold levels and as such is unlikely to require additional mitigation. Some mitigation will be provided however by the positioning the outflow discharge point in an open (not enclosed) area with high wave /water exchange action for maximum mixing and dilution. The “on farm” mitigation will be based on securing and maintaining adequate flow rates and acceptable stocking densities to minimise the risk of pollutant concentrations.
- the volumes of perishable items ordered at any one time will be limited to avoid the risk of having to dispose of expired items;
- goods with minimal packaging or with packaging that is readily recyclable or re-usable will be purchased in preference to others with a greater volume of packaging or with packing that is not recyclable; and,
- non-hazardous substances will be used on site so that the brushes, rags and sponges can be washed and re-used.

Provision will be made for the recycling, re-use and recovery of waste if the process of recycling, re-use or recovery of that waste does not use more natural resources than disposal and if it is less harmful to the environment than disposal. Waste will accordingly be separated into the four categories described below: -

- Non-hazardous recyclables
- Non-hazardous non-recyclables
- Hazardous recyclables
- Hazardous non-recyclables.

The following are general approaches that will be adopted to the separation and storage of waste –

- General:
  - No litter will be permitted to accumulate in or around the construction sites;
  - Dry cleaning of bins will be preferred – where this is not possible no waste water will be disposed to storm water drains or channels;
  - The storage areas will not be located near a drain or the sea;
  - If for any reason any general waste comes into contact with hazardous waste that general waste will be regarded as being hazardous and managed as hazardous waste;
  - Liquid and solid wastes will be kept separate;
  - Paper and cardboard will be kept separate from other wastes and in a dry place;
  - Wastes will be stored in containers that protect the contents from rain water or wind dispersal and, where appropriate, infestation by vermin;
  - Waste storage containers will be situated where they cannot be easily overturned or damaged by passing vehicles;
  - Any waste which can rot (e.g. putrescible waste such as dead abalone) and cause odours or other health hazards will be stored on site for a maximum of 24 hours after generation (unless frozen);
  - Once waste has been placed in a bin or storage area it will not be removed for any purposes other than placing it in a storage area or for collection and transportation off site; and,
  - Waste storage containers and areas will be clearly labelled. The labels will detail the contents of the storage container and the waste type as per the four categories above or, in the case of hazardous waste, legislative requirements.
- Hazardous wastes:
  - Hazardous wastes will be kept and stored separately from non-hazardous waste;
  - Hazardous wastes will be stored in containers which clearly detail the nature of the hazardous contents; and,
  - The hazardous waste will be disposed of by a licensed contractor immediately the containers are filled.
- General provisions for waste collection, transportation, treatment and disposal

- Wastes will be collected and transported to recycling, treatment or disposal facilities by –
  - The local authority;
  - Persons authorised, or not prevented by law, from collecting recyclable waste; or
  - An authorised disposal company.
- If plastic bags are used to contain general waste they will be tied closed to prevent waste falling out during transportation;
- Waste will only be delivered to licensed disposal or recycling facilities, where a licence is required;
- All waste loads will be correctly labelled as per legislative requirements; and,
- The volume or mass of each waste load will be recorded.
- Hazardous wastes
  - Containers in which hazardous waste is stored will be sealed and in good condition to prevent spillage of the wastes en-route;
  - Hazardous wastes which will ultimately be disposed of in the same way be combined in a single container **under the condition** that the waste disposal company has sanctioned this exact wastes that are being combined (Note: this endorsed by the waste disposal company must be obtained before the wastes are deposited in the containers, preferably at the start of work at a particular site) (Note: this mixing of waste not contain any aerosol cans of any description or any hazardous liquids or solids in excess of 25 litres);
  - A detailed record of every waste deposited in the waste container **must** be maintained according to legislation. This record will detail the nature and quantity of each hazardous waste and must accompany the application to have it removed by a waste contractor;
  - No hazardous waste will be allowed to be transported off site unless the vehicle complies with legislative requirements regarding placards and other safety requirements;
  - Where legislation requires hazardous waste to be treated it will be treated by a competent person who is authorised to do so;
  - Where hazardous waste is transported off site, a waste manifest will be completed by an authorised employee and signed by the waste transporter and an MSDS furnished to the transporter if required; and,
  - Safe Disposal Certificates for the disposal of hazardous waste must be returned to the site manager to provide verification of lawful disposal.

#### **7. MONITORING AND REPORTING**

- The Site Operations Manager shall monitor that the site is free of litter and that bins and sewage tank are well managed and not overfull daily.
- The Site Operations Manager shall check the sump at junction of two waste water channels for debris and contaminants daily.
- The Site Operations Manager shall maintain a log and disposal receipts related to disposal of wastes on site in the project environmental file.

The following documents relating to waste management shall be kept on site and for the specified period :

- Waste register (continually updated);
- Safe disposal certificates for hazardous waste (5 years after completion of the construction works);
- Waste manifests (5 years after completion of the construction works); and,
- Records of environmental incidents (to be kept for 5 years after completion of the construction works).

#### **8. RELATED DOCUMENTS**

- Sections 3, 4, 5, 7, 8, of this OEMP.

<b>EMPr Sect 4.8.</b>	<b>2. Materials Handling</b>		
<b>Version no</b>	01	<b>Date</b>	May 2013
<b>1. RESPONSIBILITIES</b>			
<b>Responsible person/s:</b>	Operational Manager		
	General staff		
<b>2. DESCRIPTION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>• The activities on site involve (to varying degrees) the following types of chemicals/ compounds (amongst others): <ul style="list-style-type: none"> <li>○ Oils,</li> <li>○ Greases;</li> <li>○ Fuels;</li> <li>○ Detergents;</li> <li>○ Paints;</li> <li>○ Solvents</li> <li>○ Pharmaceuticals; and,</li> <li>○ Pesticides (Doom etc).</li> <li>○ Herbicides</li> </ul> </li> <li>• The activities on the farm also include the handling of: <ul style="list-style-type: none"> <li>○ Fluorescent tubes</li> <li>○ Packaging Plastics/ PVC, ropes etc.</li> </ul> </li> </ul>			
<b>3. LOCATION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>• Aristeia site</li> <li>• Town site</li> </ul>			
<b>4. ANTICIPATED ENVIRONMENTAL IMPACTS/RISKS</b>			
<ul style="list-style-type: none"> <li>• Pollution of the soil, surface and ground water;</li> <li>• Pollution of the near shore marine environment;</li> <li>• Disruption of intertidal marine ecosystems;</li> <li>• Human health and safety impacts and/ or nuisance;</li> <li>• Contamination of the abalone stocks;</li> <li>• Contravention of environmental and safety legislation.</li> </ul>			
<b>5. OBJECTIVE/PURPOSE OF MITIGATION MEASURES</b>			
<ul style="list-style-type: none"> <li>• To ensure safe and responsible handling and storage of chemicals and solids.</li> </ul>			
<b>6. PROCEDURE/MITIGATION</b>			
<ul style="list-style-type: none"> <li>• The operations shall comply with all relevant national, regional and local legislation with regard to the storage, use and disposal of petroleum, chemicals, harmful and hazardous substances and materials.</li> <li>• A dedicated chemical store shall be established per the above requirements in which all chemicals used on the project are stored in accordance with relevant specifications.</li> <li>• The chemicals store shall be kept locked with access restricted to authorized personnel and shall be properly ventilated and banded in case of a spill.</li> <li>• An inventory of all chemical substances detailing the type, hazard rating and volumes kept in the store shall be kept on file and displayed on the door of the chemicals store and shall be updated as necessary.</li> <li>• All flammable substances shall be stored in a flammables store; a serviced fire extinguisher shall be located on the outside of the store.</li> <li>• The MSDS for each chemical substance stored and used on site shall be kept on file and displayed in the chemicals store for</li> </ul>			

reference.

- The storage, handling and disposal procedures for these materials as stipulated by the MSDS of each substance shall be implemented.
- Expired chemicals shall be disposed of in accordance with the MSDS requirements.
- All necessary precautions to prevent accidental spillage of chemical substances shall be followed e.g. the use of a drip tray during refuelling, storage of chemicals in leak free containers, use of appropriate decanting equipment etc.
- The storage location and quantities of chemicals and hydrocarbons should take into account potential storm damage / flood and be positioned where possible in suitable facility behind (inland) of the immediate seaward facilities exposed to such risk. If this is impossible the quantities of such chemicals stored in the seaward rooms should be restricted to 2x 210 litres diesel and 150 litres petrol
- In case of a spillage, the requirements of the Incident response or Emergency Procedure dealing with chemical spills shall be followed.
- The Site Operations Manager shall be responsible for the training and education of the personnel who will be handling the chemicals.

#### **7. MONITORING AND REPORTING**

- The Site Operations Manager is to inspect all fire extinguishers at a minimum every 6 months to ensure that it is adequate, accessible and maintained.
- The Environmental Auditor is to verify correct storage and that the relevant MSDS are on file.

#### **8. RELATED DOCUMENTS**

- Sections 2, 4, 5, 7, 8 of this OEMP.

<b>EMPr Sect 4.8.</b>	<b>3. Infrastructure Management</b>																		
<b>Version no</b>	01	<b>Date</b>	May 2013																
<b>1. RESPONSIBILITIES</b>																			
<b>Responsible person/s:</b>	Operational Manager																		
<b>2. DESCRIPTION OF THE ACTIVITY</b>																			
<ul style="list-style-type: none"> <li>• Some of the infrastructure of the farm needs to be maintained to ensure adequate environmental protection. These include:               <ul style="list-style-type: none"> <li>○ Conservancy tank;</li> <li>○ Drainage channels and the common sump</li> <li>○ Sea water intake point</li> <li>○ Seawater pumps and filtration plant;</li> <li>○ Seaward face of the buildings; and,</li> <li>○ Chemical stores and bunds.</li> </ul> </li> <li>• Furthermore, some of the maintenance activities themselves could impact on the environment. These include:               <ul style="list-style-type: none"> <li>○ Repainting; and,</li> <li>○ Any concrete or other building works.</li> </ul> </li> </ul>																			
<b>3. LOCATION OF THE ACTIVITY</b>																			
<ul style="list-style-type: none"> <li>• This procedure is only applicable to the land-based areas of the farm.</li> </ul>																			
<b>4. ANTICIPATED ENVIRONMENTAL IMPACTS/RISKS</b>																			
The possible environmental impacts are reflected below.																			
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To: <ul style="list-style-type: none"> <li>• Ensure that infrastructure intended to protect the environment is fully functional; and,</li> <li>• Ensure that maintenance of the infrastructure does not result in environmental impacts.</li> </ul>																			
<b>6. PROCEDURE/MITIGATION</b>																			
<ul style="list-style-type: none"> <li>• The following infrastructure shall be inspected daily and repaired as needed:</li> </ul>																			

- Conservancy tank;
- Drainage channels and sumps; and,
- Seawater pumps and filtration plant.
- The seawater intake shall be checked monthly.
- The seaward facing walls and windows of the buildings shall be inspected for damage after any significant storm.
- Any maintenance on the buildings shall be subject to the housekeeping, chemical handling and waste management procedures.
- Any leaking taps or pipes shall be identified and repaired immediately.

**7. MONITORING AND REPORTING**

- The Operational Manager shall maintain a checklist of inspections.

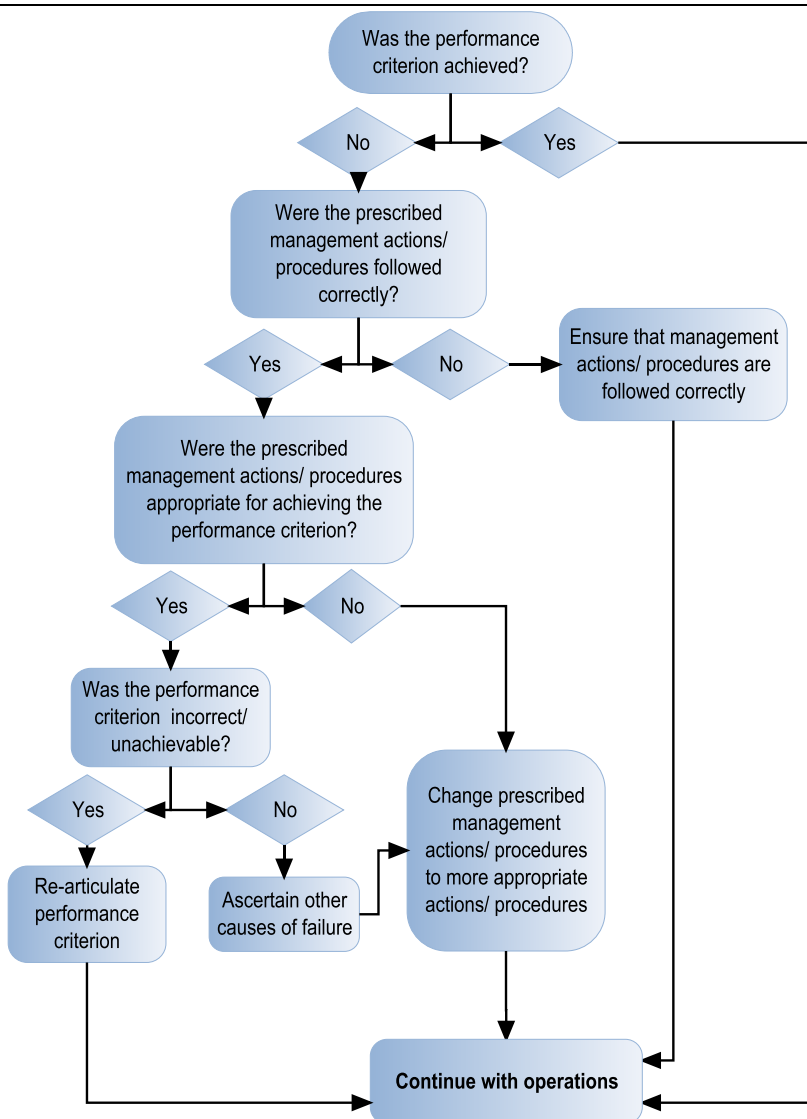
**8. RELATED DOCUMENTS**

- Related sections: 2, 3, 7, 8 of this OEMP.

<b>EMPr Sect 4.8.</b>	<b>4. Equipment Maintenance</b>		
<b>Version no</b>	01	<b>Date</b>	May 2013
<b>1. RESPONSIBILITIES</b>			
<b>Responsible person/s:</b>	Operational Manager		
<b>2. DESCRIPTION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>• Loading equipment, vehicles and machinery such as compressors need to be maintained to ensure that they do not pollute the environment.</li> <li>• In addition, the maintenance activities must take place in such a way as to prevent pollution occurring.</li> </ul>			
<b>3. LOCATION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>• These activities are restricted to the land-based areas of the farm.</li> </ul>			
<b>4. ANTICIPATED ENVIRONMENTAL IMPACTS/RISKS</b>			
<p>The possible environmental impacts are reflected below.</p> <ul style="list-style-type: none"> <li>• Inadequately maintained vehicles, boats, compressors, generators and lifting equipment can result in: <ul style="list-style-type: none"> <li>○ Excess gaseous emission; and/ or,</li> <li>○ Oils, fuel leakages.</li> </ul> </li> <li>• Maintenance activities can result in: <ul style="list-style-type: none"> <li>○ Generation of hazardous and non-hazardous waste; and,</li> <li>○ Spillage to soil and or sea.</li> </ul> </li> </ul>			
<b>5. OBJECTIVE/PURPOSE OF MITIGATION MEASURES</b>			
<p>To:</p> <ul style="list-style-type: none"> <li>• Prevent environmental impacts resulting from poorly maintained equipment;</li> <li>• Prevent cross contamination of waste;</li> <li>• Prevent pollution as a result of maintenance activities.</li> </ul>			
<b>6. PROCEDURE/MITIGATION</b>			
<ul style="list-style-type: none"> <li>• All vehicles and other fuel-driven plants shall be checked weekly to ensure that there are no fuel/oil leaks or excessive noise or smoke emitted. Any defects shall be repaired immediately.</li> <li>• Maintenance and replacement of worn components identified during the inspections contemplated above shall be undertaken as soon as possible.</li> <li>• Any leaks or other defects noted in between weekly inspections shall be drawn to the attention of the Site Operational Manager and rectified.</li> <li>• Any maintenance shall be carried out in accordance with housekeeping and materials handling procedures. Any spills shall be treated according to the incident response procedure.</li> </ul>			
<b>7. MONITORING AND REPORTING</b>			
<ul style="list-style-type: none"> <li>• The Site Operational Manager shall maintain an inspection checklist for every vehicle, boat and other fuel-driven plant detailing: <ul style="list-style-type: none"> <li>○ Dates and result of inspections;</li> <li>○ Dates of services and or maintenance; and,</li> <li>○ Details of any other defects.</li> </ul> </li> </ul>			
<b>8. RELATED DOCUMENTS</b>			
<ul style="list-style-type: none"> <li>• Related sections: 2, 3, 7, 8 of this OEMP.</li> </ul>			

<b>EMPr Sect 4.8.</b>	<b>5. Monitoring/ checking</b>		
<b>Version no</b>	01	<b>Date</b>	May 2013
<b>1. RESPONSIBILITIES</b>			
<b>Responsible person/s:</b>	University of Stellenbosch		
	External Auditor		
<b>2. DESCRIPTION OF THE ACTIVITY</b>			
<p>Planning environmental protection measures in advance is based on assumptions and predictions about possible hazards, their source and behaviour and the most appropriate responses to take. It is only through trial and error that the plans become fully effective. For this reason all aspects of this EMPr must be monitored and reviewed regularly to permit continual improvement.</p> <p>This procedure details the nature of activities required for this process to be effective.</p>			
<b>3. LOCATION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>All areas of the farm.</li> </ul>			
<b>4. ANTICIPATED ENVIRONMENTAL IMPACTS/RISKS</b>			
<ul style="list-style-type: none"> <li>There is no single list of environmental impacts addressed by this procedure; rather it ensures that all impacts and risks detailed in other sections are managed appropriately.</li> </ul>			
<b>5. OBJECTIVE/PURPOSE OF MITIGATION MEASURES</b>			
<p>To ensure:</p> <ul style="list-style-type: none"> <li>Continual improvement;</li> <li>That there is a documented mechanism for reviewing environmental performance of the farm's activities;</li> <li>When outcomes do not meet expectations, the reasons for this are identified and corrective measures are implemented; and,</li> <li>Performance of the farm is reported to the authorities as required.</li> </ul>			
<b>6. PROCEDURE/MITIGATION</b>			
<p>The Site Operational Manager shall:</p> <ul style="list-style-type: none"> <li>monitor all operations on a weekly basis to determine if the prescribed environmental protection is achieved;</li> <li>review audit reports to identify deficiencies in environmental management during construction;</li> <li>employ the decision tree overleaf if performance does not meet specifications;</li> <li>suggest amendments to environmental specifications to Stellenbosch University and Department Science and Technology; and,</li> <li>report any such action to DEA.</li> </ul> <p><b>*NOTE – No current guidelines and requirements exist in terms of monitoring water quality parameters for land-based abalone farming and the discharge of seawater associated with it. It is anticipated that the implementation of the discharge permit system will identify requirements and monitoring will be in line with those when established by the DAFF. In the absence of such guidelines or limits the operation will monitor / record temperature, dissolved oxygen, pH and suspended solids. The results of such monitoring would be compared to the receiving water quality (RWC) and based on expert opinion a benchmark could be considered /set at a level of 20%.</b></p>			





An external compliance audit shall be commissioned annually for the first three years and every third year thereafter.

- The external auditor shall review all documentation and records held by the Site Operational Manager.
- Conduct physical site inspections.
- Compile a report detailing:
  - Documentation reviewed;
  - Details of compliance and non-compliance using the definitions of compliance detailed below;
  - An assessment of the efficiency and or effectiveness of the EMPr;
  - An assessment of the record and document keeping of the EMPr;
  - Any recommendations for improvement; and,
  - An overall statement of compliance.
- Submit the audit report to Stellenbosch University which will then be copied to DEA.

When auditing compliance, it is useful to distinguish between difference types of non-compliance as this will inform the degree of severity/materiality of the finding. The figure below illustrates two types of non-compliance.

In discussing the figure, it is useful to first discuss the nature of **compliance**. Clearly, if the conditions of the Authorisation are fully incorporated into the EMPr and Procedures and no environmental damage results, a finding of **compliance** is the logical outcome.

However, if all the conditions of the Authorisation are fully incorporated into the EMPr and Procedures but the site staff fails to implement them BUT the Site Operational Manager notes the failure to comply and takes remedial action and no environmental damage results, the finding is also of **compliance**. In this instance, whilst the staff was non-compliant, the Site Operational Manager was fully compliant in taking remedial action so the end result complied with the intent of the Authorisation from an audit perspective.

In considering **non-compliance** then; if not all of the conditions of the Authorisation are incorporated into either the EMPr or the Procedures a finding of **non-compliance** is obvious. However, as already noted, this has far less significance than if there had been environmental

damage, so there needs to be a way of distinguishing between the two types of non-compliance.

For this reason it is convenient, for the purposes of this audit report, to distinguish between **Technical non-compliance** and **Material non-compliance**. The former deals with non-compliances which **do not** result in environmental damage and are largely administrative in nature and the latter deals with non-compliances that **do** result in environmental damage and are therefore of much greater significance. The latter, which result in environmental damage and therefore contravene environmental legislation require immediate attention.

- Specialist monitoring of abalone health in the land-based and sea-ranching areas shall be undertaken by a qualified veterinarian who is registered with the South African Veterinary Council.
- the applicant will be adopting and implementing an applicable biosecurity plan.
- Stellenbosch University and Department Science and Technology shall review monthly reports from the Site Operational Manager and external audits reports and oversee a review of the EMP on an annual basis and make improvements as required.
- Any such improvements shall be submitted to DEA.

#### **7. MONITORING AND REPORTING**

- Annual reports detailing all monitoring results and improvements shall be submitted to DEA annually.

#### **8. RELATED DOCUMENTS**

- Related sections: 1, 2, 8, 9, 10 of this OEMP.

<b>EMPr Sect 4.8.</b>	<b>6. Storm water and erosion management</b>		
<b>Version no</b>	01	<b>Date</b>	May 2013
<b>1. RESPONSIBILITIES</b>			
	Operational Manager		
<b>2. DESCRIPTION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>• Hondeklip Bay receives on average about 66mm of rain per year, most of which is received during winter.</li> <li>• Soil classes of this area are subject to high erodibility.</li> <li>• The Town site is already utilised for abalone farming purposes, albeit a pilot project. The site has hard surfaces and the footprint is not to be increased. Changes are proposed to existing buildings with a minimal increase in the amount of hard surfaces. Storm water from rain events would collect from gutters and run into the sea, as is current practice.</li> <li>• The Aristeia site would be a newly developed site. Buildings and access areas would be hard surfaced, but storm water from roofs would be collected in rain water tanks. Any other storm water would run off from the site into the surrounding natural area, which consists of sandy soils with high permeability.</li> <li>• Due to the low rainfall in the area, it is highly unlikely that high volumes of storm water run-off will be experienced.</li> <li>• As there are minimal exposed surfaces present at the town site, erosion is unlikely to occur</li> </ul>			
<b>3. LOCATION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>• Town site and Aristeia site</li> </ul>			
<b>4. ANTICIPATED ENVIRONMENTAL IMPACTS/RISKS</b>			
<ul style="list-style-type: none"> <li>• Scouring</li> <li>• Loss of topsoil and vegetation</li> </ul>			
<b>5. OBJECTIVE/PURPOSE OF MITIGATION MEASURES</b>			
<ul style="list-style-type: none"> <li>• Prevention of erosion</li> </ul>			
<b>6. PROCEDURE/MITIGATION</b>			
<ul style="list-style-type: none"> <li>• Ensure gutters and rainwater collection tanks are in working order</li> <li>• Check exposed surfaces after rainfall events</li> <li>• Repair any signs of erosion immediately</li> </ul>			
<b>7. MONITORING AND REPORTING</b>			
<ul style="list-style-type: none"> <li>• The OM shall monitor implementation of this procedure</li> </ul>			
<b>8. RELATED DOCUMENTS</b>			
None			

<b>EMPr Sect 4.8.</b>	<b>7. Housekeeping</b>												
<b>Version no</b>	01	<b>Date</b>	May 2013										
<b>1. RESPONSIBILITIES</b>													
<b>Responsible person/s:</b>	Operational Manager												
<b>2. DESCRIPTION OF THE ACTIVITY</b>													
<ul style="list-style-type: none"> <li>• Housekeeping refers to the activities that take place in any organisation that are not directly related to the core business but that can have an impact on the environment. For example, leaking taps could waste water in a water-scarce environment. Poor cleaning could result in pollution and mixed waste loads. This procedure aims to address those activities that are not addressed under other procedures.</li> </ul>													
<b>3. LOCATION OF THE ACTIVITY</b>													
<ul style="list-style-type: none"> <li>• This procedure focuses on the land-based areas of the farm.</li> </ul>													
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<b>5. OBJECTIVE/PURPOSE OF MITIGATION MEASURES</b>													
<p>To:</p> <ul style="list-style-type: none"> <li>• Ensure that the waste management is implemented correctly;</li> <li>• Reduce water wastage;</li> <li>• Reduce the risk of contamination of the incoming or outgoing sweater from the farm; and,</li> <li>• Reduce the possibility of soil contamination.</li> </ul>													
<b>6. PROCEDURE/MITIGATION</b>													
<ul style="list-style-type: none"> <li>• Interior floors, exterior roads/paved parking areas and yards shall not be cleaned using fresh water but shall be swept to keep them free of sediment/debris. In the event of water being required (for example in the ablutions) the waste water must be mopped up and disposed of to the conservancy tank. Sea water is to be used for washing under the condition that it does not drain to the exposed soil.</li> <li>• Only proper hoses and fittings in good repair shall be used on site to avoid water wastage. Wherever possible, pistol grip fittings should be used on the end of hoses. All taps shall remain properly closed when not in immediate use and all broken pipes / fittings shall be isolated immediately and repaired as soon as possible.</li> <li>• Only biodegradable cleaning agents be used especially when the waste water is to be disposed to the conservancy tank.</li> <li>• Waste bins are to be emptied regularly in accordance with the waste management procedure. Wastes not be mixed.</li> <li>• All cleaning and maintenance products shall be stored in locked water-tight containers or rooms. The room or container shall have a lip or bund across the entrance to contain any spillage. Any spillage within the bund shall be cleaned immediately it is noted. Any spillage outside the bund area is to be treated as an incident and action taken accordingly. Any paints and solvents shall be stored in a flammable store.</li> <li>• Wherever possible, use shall be made of water-based paints. If solvent based paints are to be used they and their solvents shall be</li> </ul>													

stored as above. Brushes and containers shall not be washed into storm water drains. Water-based paints and containers shall be washed into the sewer. Solvents based paintbrushes and containers shall be washed into a collecting drum and the waste solvent disposed of as hazardous waste.

- The workshop shall be dry-cleaned as above. Activities where oils and fuels are used or be released such as motor maintenance shall take place in a drip tray or inside a bund wall. Any spillages inside the bund shall be cleaned and the waste disposed of as hazardous waste. Significant spillages outside the bunds shall be treated as environmental incidents and treated accordingly.
- Alien invader plants shall not be encouraged or utilised and landscape maintenance shall clear the areas and actively treat such with industry approved treatments and products
- Vermin, rodent and garden pest control shall be undertaken by registered pest control specialists or horticulturists. Pest control not be conducted by unqualified/ uncertified personnel.

#### **7. MONITORING AND REPORTING**

- The Site Operational Manager shall conduct weekly inspections of the site to ensure that this procedure is implemented.

#### **8. RELATED DOCUMENTS**

- Related sections: 2, 3, 4, 5, 8 of this OEMP.

<b>EMPr Sect 4.8.</b>	<b>8. Incident Management</b>		
<b>Version no</b>	01	<b>Date</b>	May 2013
<b>1. RESPONSIBILITIES</b>			
<b>Responsible person/s:</b>	Operational Manager		
<b>2. DESCRIPTION OF THE ACTIVITY</b>			
<p>A significant environmental incident is any inadvertent occurrence (including sabotage):</p> <ol style="list-style-type: none"> <li>1. in which the performance criteria specified in this EMPr have been inadvertently contravened, or</li> <li>2. any environmental facet (air, water, soil) has been endangered or degraded through a spill or similar event.</li> </ol> <p>This will include but is not limited to:</p> <ul style="list-style-type: none"> <li>• spills of any liquid or solid onto the exposed soil, into the storm water drain or sewer or any natural watercourse</li> <li>• an accidental release of any gaseous substance to atmosphere</li> </ul> <p><b>Note:</b> The above definitions do not include danger to human wellbeing. Such incidents will be managed with a parallel OHS Act system.  <b>Note:</b> This definition is different from the definition of a significant incident defined in terms of section 30(1)(a) of NEMA as an unexpected sudden occurrence, including a major emission, fire or explosion leading to <b>serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed.</b> The incidents dealt with by this procedure are localised and do not require the intervention of the Department of the Environment. If the incident is deemed significant in terms of this legislation the procedure is overruled and the procedure legislated by the Department shall be assumed.</p>			
<b>3. LOCATION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>• This procedure is likely to be focussed on land-based activities since incidents in the marine environment have not been identified to date. However the principle can be applied in the sea in the event that an incident is identified.</li> </ul>			
<b>4. ANTICIPATED ENVIRONMENTAL IMPACTS/RISKS</b>			
<ul style="list-style-type: none"> <li>• An incident occurs when any of the environmental facets is endangered or is actually affected.</li> </ul>			
<b>5. OBJECTIVE/PURPOSE OF MITIGATION MEASURES</b>			
<p>To:</p> <ul style="list-style-type: none"> <li>• Limit the possibility of environmental damage resulting from accidents;</li> <li>• Reduce the possibility of a small-scale accident escalating into a major event; and,</li> <li>• Reduce the possibility of accidents being repeated.</li> </ul>			
<b>6. PROCEDURE/MITIGATION</b>			
<ul style="list-style-type: none"> <li>• Any incident occurring in the land-based facility or ranching area will be reported to the Site Operational Manager immediately. See <b>Appendix 3</b> for example of incident report form.</li> <li>• Upon receiving a report of an incident, the Site Operational Manager shall take any action required to prevent the impact of the incident from spreading.</li> <li>• Once the cause of the incident has been removed, any spill or residue shall be retrieved and dealt with in accordance with the waste management procedure.</li> <li>• Any spill of pollutants onto exposed soil will be retrieved <b>with the soil</b> and disposed of as hazardous waste. Absorbent pads should not be used unless the spill exceeds 25 litres as it will not be able to affect the spill draining into the soil.</li> <li>• Once the incident area has been stabilised, the Site Operational Manager shall complete the incident investigation form. This shall include a full investigation into the causes of the incident and how a recurrence can be avoided.</li> <li>• Once the form has been completed it shall be submitted to Stellenbosch University and Department Science and Technology for review within one week of the incident.</li> <li>• <b>Note: In the event of a significant incident which is defined in terms of section 30(1)(a) of NEMA as an unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed, the incident shall be reported to the National Department of Water and the Environment and an appropriate incident form completed and submitted to the regional office or as instructed by the</b></li> </ul>			

**competent official.**

- Emergency procedures detailing the actions to be taken in the event of:
  - Outbreak of disease – significant mortality/outbreak of disease (more than 10 animals in any day / basket),
  - Fire;
  - Significant wave damage;
  - Overflow of the conservancy tank;
  - Failure of incoming water supply;
  - Power failure.
- Telephone numbers of emergency services, including the local fire fighting service, police and ambulance as well as contact details for site management shall be posted prominently at a central location of the land-based facilities serving the project site.
- All staff members shall be trained in the procedure to be followed in the event of the above emergencies as well as small incidents.
- All incidents must be reported to Stellenbosch University and Department Science and Technology. Large incidents must be reported to DEA.

**7. MONITORING AND REPORTING**

- Emergency drills shall be conducted annually.
- Incident reports must be reviewed by the external auditor.

**8. RELATED DOCUMENTS**

- Related sections: 1, 3, 4, 5, 7 of this OEMP.

EMPr Sect 4.8.	<b>9. Alien invasive plant management</b>		
<b>Version no</b>	01	<b>Date</b>	May 2013
<b>1. RESPONSIBILITIES</b>			
	Operational Manager		
<b>2. DESCRIPTION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>• The area (Aristea site) is in rather pristine condition with little or no alien vegetation</li> <li>• Alien vegetation could potentially be brought in with construction materials.</li> <li>• Planning for the eradication of such plants is thus necessary and is also required by legislation.</li> </ul>			
<b>3. LOCATION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>• The entire farm.</li> </ul>			
<b>4. ANTICIPATED ENVIRONMENTAL IMPACTS/RISKS</b>			
<ul style="list-style-type: none"> <li>• Alien invasive plants lead to a decrease in biodiversity in natural areas,</li> <li>• Alien invasive plants lead to an increased fire risk</li> <li>• Alien invasive plants are very water hungry, thus utilising more surface and ground water than natural vegetation.</li> </ul>			
<b>5. OBJECTIVE/PURPOSE OF MITIGATION MEASURES</b>			
<ul style="list-style-type: none"> <li>• Prevention of establishment of alien invasive plants</li> <li>• Removal of alien invasive plants to prevent the further spreading of these plants.</li> </ul>			
<b>6. PROCEDURE/MITIGATION</b>			
<ul style="list-style-type: none"> <li>• All Category 1 and 2 alien invasive vegetation as directed by the National Conservation of Agricultural Resources Act (Act 43 of 1983) or any amendments thereto, are to be removed from the Site on a continuous basis.</li> <li>• The plants will preferably be controlled while young so that seedlings are not be allowed to grow to a size where they have reached seed bearing age or require expensive mechanical or chemical controls.</li> <li>• Chemicals use in alien invasive plant control shall be per the chemical use specifications in Specification 2 of this OEMP.</li> <li>• A follow up programme is important to limit the re-establishment of aliens in cleared areas.</li> <li>• Should major proliferation occur, all clearing actions shall be monitored and documented to keep track of which areas are due for follow-up clearing.</li> </ul>			
<b>7. MONITORING AND REPORTING</b>			
<ul style="list-style-type: none"> <li>• The OM shall monitor implementation of this procedure</li> </ul>			
<b>8. RELATED DOCUMENTS</b>			
None			



<b>EMPr Sect 4.8.</b>	<b>10. Employment</b>		
<b>Version no</b>	01	<b>Date</b>	May 2013
<b>1. RESPONSIBILITIES</b>			
<b>Responsible person/s:</b>	University of Stellenbosch		
	Operational Manager		
<b>2. DESCRIPTION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>This procedure describes the employment and training strategy required to satisfy the recommendations of the social impact assessment for the ranching application. While the social impact assessment did not identify any social risks, recommendations regarding employment were made.</li> </ul>			
<b>3. LOCATION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>All staff.</li> </ul>			
<b>4. ANTICIPATED ENVIRONMENTAL IMPACTS/RISKS</b>			
<ul style="list-style-type: none"> <li>Alleviation of poverty in the local communities and improved quality of life for staff members.</li> </ul>			
<b>5. OBJECTIVE/PURPOSE OF MITIGATION MEASURES</b>			
<p>To:</p> <ul style="list-style-type: none"> <li>Employ staff from local communities wherever possible;</li> <li>Contribute to poverty alleviation in the Hondeklip Bay community;</li> <li>Improve education levels in staff members from the local community; and,</li> <li>Ensure the employment opportunities for members of the local community are maximised through provision of skills training for the company's employees and allowing for career development of company staff.</li> </ul>			
<b>6. PROCEDURE/MITIGATION</b>			
<ul style="list-style-type: none"> <li>All candidates should receive equal application opportunities.</li> <li>Only applicants suitably qualified will be selected for specific employment opportunities.</li> <li>The Stellenbosch University employment strategy and procedures will be followed in every application and employment: <ul style="list-style-type: none"> <li>All staff to receive on-going "in-job" training including technical training for farm-related activities and training in the implementation of this EMPr;</li> <li>Specialist training to be provided for key personnel (e.g. e.g. the Aquaculture Certificate Course presented by Stellenbosch University);</li> <li>Continuous monitoring of all staff to identify possible candidates for promotion if and when the employment opportunity arises; and,</li> <li>Provide opportunities for "in-house" promotion for staff that prove themselves in the daily operations.</li> </ul> </li> </ul>			
<b>7. MONITORING AND REPORTING</b>			
<ul style="list-style-type: none"> <li>The Site Operations Manger shall monitor implementation of this procedure; and,</li> <li>Training records shall be maintained and reviewed by the external auditor.</li> </ul>			
<b>8. RELATED DOCUMENTS</b>			
<ul style="list-style-type: none"> <li>Socio-economic Study of Hondeklip Bay, University of Stellenbosch. 2008</li> <li>SOCIAL IMPACT ASSESSMENT. Northern Cape Province Zone NC4. Compiled for Diamond Coast Abalone by Liezel de Waal. 23 May 2011.</li> </ul>			

<b>EMPr Sect 4.8.</b>	<b>11. Community Liaison</b>		
<b>Version no</b>	01	<b>Date</b>	May 2013
<b>1. RESPONSIBILITIES</b>			
<b>Responsible person/s:</b>	University of Stellenbosch		
	Operational Manager		
<b>2. DESCRIPTION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>The social impact assessment conducted for the ranching operations revealed a need for regular and effective communication with the local communities.</li> </ul>			
<b>3. LOCATION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>The entire farm.</li> </ul>			
<b>4. ANTICIPATED ENVIRONMENTAL IMPACTS/RISKS</b>			
<ul style="list-style-type: none"> <li>Information dissemination to local communities, full community by-in.</li> </ul>			
<b>5. OBJECTIVE/PURPOSE OF MITIGATION MEASURES</b>			
<p>To:</p> <ul style="list-style-type: none"> <li>Keep the local communities informed about developments in the farm that affect them; and,</li> <li>Receive feedback from and respond to inputs from the local communities.</li> </ul>			
<b>6. PROCEDURE/MITIGATION</b>			
<ul style="list-style-type: none"> <li>A newsletter detailing opportunities, activities and events and reports and responds to feedback from the community will be published quarterly;</li> <li>The newsletter shall be distributed within the local community;</li> <li>Further community inputs will be invited through the newsletter; and,</li> <li>Advertisements for service providers and job opportunities as well as new appointments will be detailed in the newsletter.</li> </ul>			
<b>7. MONITORING AND REPORTING</b>			
<ul style="list-style-type: none"> <li>The external auditor shall review the regular publication of this newsletter.</li> </ul>			
<b>8. RELATED DOCUMENTS</b>			
<ul style="list-style-type: none"> <li>SOCIAL IMPACT ASSESSMENT. Northern Cape Province Zone NC4. Compiled for Diamond Coast Abalone by Liezel de Waal. 23 May 2011</li> </ul>			

<b>EMPr Sect 4.8.</b>	<b>12. Record keeping</b>		
<b>Version no</b>	01	<b>Date</b>	May 2013
<b>1. RESPONSIBILITIES</b>			
<b>Responsible person/s:</b>	Operational Manager / University of Stellenbosch		
<b>2. DESCRIPTION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>This procedure details the records that are required to confirm compliance with this EMPr and related legislation.</li> </ul>			
<b>3. LOCATION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>Not applicable</li> </ul>			
<b>4. ANTICIPATED ENVIRONMENTAL IMPACTS/RISKS</b>			
<ul style="list-style-type: none"> <li>Not applicable</li> </ul>			
<b>5. OBJECTIVE/PURPOSE OF MITIGATION MEASURES</b>			
<p>To:</p> <ul style="list-style-type: none"> <li>Ensure that sufficient data is available to permit review of environmental performance;</li> <li>Ensure that the documentation and reports are maintained in a logical manner; and,</li> <li>Ensure that data is readily available for third party audits.</li> </ul>			
<b>6. PROCEDURE/MITIGATION</b>			
<p>The following documents must be maintained on site in a coherent filing system:</p> <ul style="list-style-type: none"> <li>All permits, authorisations and rights to produce and grow abalone;</li> <li>Abalone health monitoring records;</li> <li>Weekly and monthly infrastructure checklists (Annexure 1);</li> <li>Vehicle and plant maintenance checklists;</li> <li>Incident reports;</li> <li>Audit reports;</li> <li>Notices or communication from authorities;</li> <li>Quarterly newsletters;</li> <li>Complaints from stakeholders and surrounding communities;</li> <li>Results of management review of the EMPr; and,</li> <li>Records of approval by authorities of revisions to the EMPr.</li> </ul>			
<b>7. MONITORING AND REPORTING</b>			
<ul style="list-style-type: none"> <li>Not applicable</li> </ul>			
<b>8. RELATED DOCUMENTS</b>			
<ul style="list-style-type: none"> <li>Sections 1-11 of this OEMP.</li> </ul>			

<b>EMPr Sect 4.8.</b>	<b>13. Reporting</b>		
<b>Version no</b>	01	<b>Date</b>	May 2013
<b>1. RESPONSIBILITIES</b>			
<b>Responsible person/s:</b>	University of Stellenbosch		
	Operational Manager		
<b>2. DESCRIPTION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>This procedure summarises reporting requirements</li> </ul>			
<b>3. LOCATION OF THE ACTIVITY</b>			
<ul style="list-style-type: none"> <li>Not applicable</li> </ul>			
<b>4. ANTICIPATED ENVIRONMENTAL IMPACTS/RISKS</b>			
<ul style="list-style-type: none"> <li>Not applicable</li> </ul>			
<b>5. OBJECTIVE/PURPOSE OF MITIGATION MEASURES</b>			
<p>To ensure that regular reporting takes place to:</p> <ul style="list-style-type: none"> <li>Authorities; and,</li> <li>Management of Stellenbosch University</li> </ul>			
<b>6. PROCEDURE/MITIGATION</b>			
<p>Reports to authorities:</p> <ul style="list-style-type: none"> <li>Changes to details of responsible person in the organisation;</li> <li>Changes to any processes or methods of ranching or harvesting the abalone;</li> <li>Changes to the EMPr;</li> <li>Incidents;</li> <li>Non-compliances with legislation or operating permits;</li> <li>Audits reports;</li> <li>Intention to close the operations.</li> <li>Reports to senior management of Stellenbosch University;</li> <li>Damage reports (infrastructure);</li> <li>Outbreaks of disease;</li> <li>Significant mortalities;</li> <li>Production rates;</li> <li>Incidents;</li> <li>Changes to the EMPr;</li> <li>Non-compliances with legislation or operating permits; and</li> <li>Complaints from communities.</li> </ul>			
<b>7. MONITORING AND REPORTING</b>			
<ul style="list-style-type: none"> <li>Not applicable</li> </ul>			
<b>8. RELATED DOCUMENTS</b>			
<ul style="list-style-type: none"> <li>Related sections 1-12 of this OEMP.</li> </ul>			

## 4.8 APPENDICES

OEMP appendices as follow:

<b>Appendix 1</b>	<i>Planning and Environmental Approvals (pending)</i>
<b>Appendix 2</b>	<i>Revisions Schedule to this OEMP (pending)</i>
<b>Appendix 3</b>	<i>Example of incident report form</i>

## **Appendix: 1**

### **Planning and environmental approvals**

**<pending>**

## **Appendix: 2**

### **Revisions schedules to the OEMP**

**<pending>**

## **Appendix: 3**

### **Incident report form**



*Hondeklip Bay Abalone Farm  
Environmental Management Program (May 2013)*

INCIDENT REPORT FORM			
<b>Section One: To be completed by the person reporting the incident</b>			
Name		Designation	
Contact number		Physical location of incident	
Describe the incident			
Was there damage/ contamination of any of the following? (Tick the appropriate box)			
Marine water column		Marine floor/sediment	Air
Was any of the following affected?			
Animal/ Plants		Shipping/ infrastructure	
What remediation has been undertaken? (describe)			
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?			
If Yes - 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)			
<b>Section Two: To be completed by the Site Operational Manager:</b>			
Does the incident potentially compromise legislation?			
What action has been taken?			
In the opinion of the Relevant Authority is the remediation action sufficient?			
If not, what further actions must be taken? (detail)			
Have all the required and appropriate actions been taken to the satisfaction Relevant Authority?			
Have all parties signed the incident form?			
<b>Note:</b> 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 serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed, the incident shall be reported to the National Department of Environment Affairs and an appropriate incident form completed and submitted to the regional office or as instructed by the competent official.			
<b>Other Comments:</b>			

\_\_\_\_\_

Date

\_\_\_\_\_

Site Operations Manager

\_\_\_\_\_

Date

\_\_\_\_\_

CEO

## **5 DECOMMISSIONING REQUIREMENTS**

A Decommissioning Plan shall be compiled and submitted to DEA if and when, decommissioning is planned for the project.

As a minimum the Decommissioning Plan must address:

Sequence of decommissioning;

- Removal or re-use for another purpose of any project infrastructure and equipment from the site;
- Clean up and rehabilitation of the project site.

## **6 REFERENCES**

- A) Anchor Environmental. November 2011.  
**Environmental Risk Assessment for an Application for a Right to Engage in an Abalone Ranching Pilot Project.**
- B) Steffani Marine Environmental Consultant. December 2010.  
**Marine Specialist Report on the Potential Biological Impacts Associated with a Proposed Abalone Ranching Pilot Project along the Northern Cape Coast.**
- C) Liezl de Waal. May 2011.  
**Abalone Ranching Social Impact Assessment.**
- D) Amanzi Bio-Security. November 2010.  
**Disease risk assessment of proposed ranching operation at Hondeklipbaai.**
- E) Ecosense June 2012  
**Hondeklip Bay Land-based Abalone Farm - Environmental Risk Assessment**

## 7 ANNEXURES

<b>ANNEXURE 1</b>	Environmental Authorisation
<b>ANNEXURE 2</b>	Internal Environmental Monitoring & Reporting Checklist
<i>(NOTE : The annexure 1: To ensure provision is made by management this annexure is listed and shall be generated from the EMPr procedures when acceptance / authorisation /commentary from the submissions have been complete).</i>	