

Particular Specification Project Specification	on plan and on the site with pegs or fencing and which are out of bounds to unauthorised persons. Authorisation must be obtained from the Engineer/Project Leader prior to entry. A specification that covers construction work involving a specialist type of operation that is not adequately covered in a Standardized Specification.
Reference Group:	A specification that describes the Works in general terms (including the locality, the conditions on Site, the extent of the Contract, the construction programme, and the service facilities available and to be taken into consideration) and that may include clauses that amend or amplify or add to any requirement(s) of a standardized specification (or standard or particular specification) in the sequence in which the requirements and specifications occur in the contract documents. The funding body and major role-players (including the environmental authorities) who may resolve environmental disputes, which could arise between the different role-players on site.
Revegetation Specification Site	This designation is reserved for the combination of the Standard Revegetation Specifications and the Detailed Revegetation Specifications. 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.
Specification	A technical description of the standards of materials and workmanship that the Contractor is to use in the Works to be executed, the performance of the Works when completed and may include the manner in which payment is to be made. It is essential for the specifications to be clear, concise and to the point, and use should not be made of ambiguous terms or phraseology.
Standard Specification	An established or accepted model specification. In South Africa the most widely accepted standard specification for general civil engineering works is the set of SABS 1200 Standardized Specifications (refer to definition below), however, other Standard Specifications such as BS, AAWA and Standard Water Specifications are also used.
Standardized Specification	A specification that is published by the South African Bureau of Standards (SABS) and that so covers a particular class of civil engineering construction that the specification is generally applicable throughout the Republic of South Africa.
Top material	This refers to any surface material in the construction area, whether it is soil, fine material or stones including vegetation.
Works	The works to be executed in accordance with a contract.

ENVIRONMENTAL MANAGEMENT PLAN FOR THE MANAGEMENT OF CONSTRUCTION AND OPERATIONAL ACTIVITIES RELATING TO THE PROTECTION OF THE ENVIRONMENT FOR THE UPGRADING OF THE PIET SE BOS AND GROTTA BEACH AREA IN HERMANUS

(This EMP is a condition as set out in the DEA&DP Environmental Authorisation 16/3/11/E2/14/2026/13 dated.....)

1. INTRODUCTION

This Environmental Management Plan (EMP) forms part of the conditions as set out in the conditions and recommendations as detailed in the DEA&DP Environmental Authorisation. This EMP binds all contractors, sub-contractors and other persons working on the site to adhere to the terms and conditions of the EMP throughout the construction and operation of the upgrading of the (1). Any other Site Specific additional activities decided and agreed upon at the "On Site Start-Up Meeting" must be included to form part of the EMP as this is EMP is a "living document" that needs to be modified where necessary as the project progresses where it will lead to an improvement in the protection of the environment.

EMP Circulation List

Full copies of this EMP should be made for the ECO, ESO, Site Engineer and/or Contractor. Appendices should also be made and circulated where relevant.

1.1 THE AFFECTED ENVIRONMENT

Topography, existing structures and drainage

The site of the proposed project is located at the present open common grassed area at Grotto beach, directly opposite the swimming beach. The project consists of the proposed upgrade of the present open grassed area at Grotto Beach, Hermanus and the area where the old Nautilus restaurant used to be. The present grassed area used to be an impenetrable wetland with an unpaved path through the surrounding milkwood forest. The wetland was filled in many years ago with all sorts of extraneous material consisting of sand, gravel and even building rubble. The area is well compacted.

At the time of filling in the wetland, a sealed and covered drainage canal was also installed around the whole western, northern and eastern perimeter of the wetland in order to drain seepage water, stormwater and rainfall runoff around the filled-in area to discharge via an existing covered channel and headwall onto Grotto beach. There are a number of springs and seepage water that feed into this drainage canal continuously.

The existing developments on the beach also consists of a lifeguard house and ablution facilities, a parking lot and other paved areas. Dutchies restaurant is also located across the road from the ablution facilities. According to the municipality, Dutchies was originally granted a permit to operate as a beachwear and curio store, but was later granted a

consent use by the Overstrand Municipality to operate as a snack bar cum restaurant during daylight hours.

The proposed upgrade of the area will consist of re-instating a portion of the wetland all around the perimeter of the infilled area by removal of the fill material. This fill material will all be used to create the sloped amphitheatre and stage with raised sloped seating. Between the amphitheatre and the edge of the portion of reinstated wetland there will be a fringe of re-established fynbos that has a raised boardwalk that will allow pedestrians access near the wetland and surrounding milkwood forest. There will also be a viewing platform with seating and information board, to get to within viewing distance of the "grotto" that is formed by rocky overhangs with dripping seepage water and associated wet-cliff vegetation.

On the footprint of the area to the south of the road where the old Nautilus restaurant used to be the intention is to construct a wooden double storey building that can be rented out to a restaurateur. The intention is for this building to have a ground level kiosk and bar area and an upper level more formal eating area.

The current covered drainage channel will be removed to allow the containment of the necessary quantity of seepage and stormwater runoff to the rehabilitated wetland area. The drain channel to the beach will be retained with a weir control to obtain the correct water level for the wetland, but that can allow the access runoff to overflow onto the beach as is presently the situation. The existing headwall on the beach will remain but will be clad with natural stone instead of the bland cement structure that is currently there, to give it a more natural appearance.

The level of the grassed area lies at ~6.0 metres above mean sea level (m.a.m.s.l.) while the road level at 10th Street immediately above the rock bank flanking the grassed common is located at 27.0 m.a.m.s.l.

Borders and surrounding land uses

The Grotto beach area falls under the jurisdiction of the Overstrand Municipality and has been used as a popular public recreational area for more than 60 years. Over the years its popularity as a recreational area has increased in leaps and bounds. Above the rocky outcrop elevation that surrounds the common grassed area lies the southernmost boundary of houses that constitutes part of the Hermanus that is known as the Voëlklip area. This area consists of mostly upmarket houses that are either permanently occupied or used as holiday houses, many of which are used only a few times a year.

Immediately across the grassed common, on the seaward side of the tar access road and parking area lies the site of the old Nautilus restaurant that was broken down after it burnt down, to the extent that only parts of the concrete slab base still remains today. There are a number of braai areas dotted around the filled in area of the common. Vehicular access was allowed onto the filled in area in the past but nowadays access is controlled by a boom.

To the south of the road that runs all along the Grotto beach area immediately behind the hummock foredunes, just to the south of the extension of Piet se Bos to the east, lies Grotto beach. This is a long stretch of beach that offers popular area where people walk their dogs, go for long walks and children play and swim.

Flora

There is no natural vegetation in the area that was infilled and the surface area was planted with kikuyu grass. A band of Milkwood Thicket vegetation in good condition surrounds the area of the proposed upgrade. There is evidence on the western end of milkwood thicket where some milkwoods were removed illegally in the past to create a view of the ocean for a single residence. The Milkwood Thicket vegetation extends to the east in a wide band right up to the parking lot located at the western end of the Kleinriviersvlei.

The original vegetation types that were present on and around the site of the proposed upgrade consisted of Cape Seashore Vegetation right next to the shore. Immediately inland of that there occurred Overberg Dune Strandveld and to the north from the top of the high stone outcrop Agulhas Limestone Fynbos occurred according to the SA National Vegetation Map 2006. These three vegetation types all carry a conservation status of Least Threatened and none are listed under section 52 of the NEM: Biodiversity Act.

Fauna

There have been reports of a variety of birds mammals and snakes reported from the area surrounding the proposed area to be upgraded. There may be some local disturbance to these fauna, but it must be noted that there is a very large area of similar milkwood thicket vegetation to the east of the proposed project area. In these areas there is minimal human interference and some areas are fenced off to prevent any access.

2. COMMENCEMENT OF WORKS

The site project contractors must timeously receive a copy of the EMP and any other further additional information that pertains to site conditions/amendments or deviations from original site plan. This EMP must form part of the Contractors Contract. A copy of the EMP must be on site at all times and available for presentation to any authority requesting to see such document.

No work on site may take place until the following has been complied with. Work also refers to camp establishment, earthmoving activities and any preliminary construction activities.

- o EMP has been approved by the relevant authorities, if this is a condition set in the Environmental Authorisation
- o On-Site Start-Up Meeting has been held
- o Site and No-Go areas have been demarcated
- o Contractors are in possession of the EMP and other relevant documentation
- o Contractors signed the Declaration Of Understanding
- o All mandatory site equipment is in place
- o On Site Environmental Education & Awareness training session has taken place with all relevant construction personnel present.

3. ENVIRONMENTAL CONDITIONS OF APPROVAL:

- Environmental Authorisation Conditions Of Approval – see Appendix 9 for full DEA&DP Environmental Authorisation 16/3/1/1/E2/14/2026/13
- Original EIA Reports Recommendations – if applicable (see Appendix 10)
- Local Authority Conditions of Approval – if applicable (see attached as appendices)

4. ISSUES OF CONCERN:

Issues of concern that were identified in the environmental impact assessment process and included in the DEA&DP Environmental Authorisation 16/3/1/1/E2/14/2026/13 in terms of NEMA are given in Appendix 9. These pre-determined environmental issues and respective activities must be addressed during the "On Site Start-Up Meeting" (OSSM) and reflected in the On-Site Start-Up Report.

The Site Specific recommendations as per the Piet se Bos and Grotto Beach area in Hermanus DEA&DP Environmental Authorisation 16/3/1/1/E2/14/2026/13 are to be included and to be reflected in the On-Site Start-Up Report. Such activities may include but shall not be limited or restricted to;

- o Access route
- o Demarcation of working footprint and removal and storage of topsoil material
- o Waste management
- o Mandatory site equipment
- o Establishment of construction site compound and fuel stores
- o Ablution & toilet facilities
- o Refuse management
- o Concrete works & batching proposals
- o Soil erosion control
- o Fire fighting equipment & emergency fire reaction plan
- o Overhead power line and/or AC cable supply route
- o New access road construction

5. ON-SITE START-UP MEETING:

The mandatory on-site start-up meeting that is conducted should preferably take place 14 days but not less than 5 working days prior to commencement of any site/camp establishment, earthworks and/or construction activities. This meeting may also relate to additional discussed information that must be complied with during the entire construction phase.

The On-Site Start-Up Meeting Report is to be attached as Appendix 1 to the Piet se Bos and Grotto Beach area EMP. The Start-Up Meeting Report must include all site-specific issues and arrangements as discussed and agreed on at the On-Site Start-Up Meeting.

The On-Site Start-Up Meeting additional information pertains to specific site construction agreements that was discussed on site by all the relevant parties and agreed upon and must be included in the On Site Start-Up Meeting Report. (The arrangements and agreements must fall within the conditions as set out in the DEA&DP Environmental Authorisation 16/3/1/1/E2/14/2026/13)

At the on-site start-up meeting (OSSM) the following issues must be addressed:

- o The EMP & other relevant site documents
- o Project to be discussed and all uncertainties are cleared
- o Method statement/s to be discussed

- o Power line installation access routes (if applicable)
- o Road and construction area to be demarcated
- o Materials stockpile and lay down areas to be demarcated
- o Method of stockpiling to be discussed
- o Fire fighting procedures
- o Mandatory fire fighting equipment & fire preventative measures
- o Integrated waste management approach and intentions
- o Placement, type and service of toilets to be agreed upon
- o Placement and type of rubbish bins and removal of rubbish to be agreed upon
- o Labour overnight camp to be demarcated and services agreed upon
- o Environmental Education and awareness training session to all contractors & onsite staff/labour

The following people must attend the on site Start-Up Meeting:

- o A representative from Overstrand Municipality
- o Main contractor's representative.
- o Site supervisor/foreman
- o Environmental consultant (EC/ECO)
- o Environmental site officer (ECO/ESO)

Minutes of the on site Start-Up Meeting will be condensed to a report format and circulated to all attendees of the above named meeting for their perusal and comments if needed. A non-response is deemed to be an acceptance of the contents and agreements of the Report. (Appendix 1)

The main contractor must provide (i) a list of all sub-contractors and their scope of work for the contract and (ii) a time schedule of works to the ECO before commencement of works. The On-site Start-up Meeting (OSSM) report will also form part of this Environmental Management Plan. If any discrepancies between the OSSM report and the EMP arise then the EMP will take precedence until clarification on the discrepancy is clarified. If any discrepancies between the EMP and the DEA&DP Environmental Authorisation 16/3/11/E2/14/2026/13 arise then the DEA&DP Environmental Authorisation will take precedence until clarification on the discrepancy is clarified.

NB: It is the responsibility of the main contractors to ensure that all sub-contractors under their control that work on the site during and after the civils contract, are informed of the environmental conditions pertaining to the site. No work is to start until the above is in place and agreed upon.

6. METHOD STATEMENT:

Method statements from the contractor may be required, depending on the environmental sensitivity of the proposed activity, for specific sensitive actions on request of the authorities, the Client or ECO. A method statement forms the baseline information on which work in sensitive areas takes place and is a "live document" in that modifications are negotiated between the Contractor and ECO/Client, as circumstances require. All method statements will form part of the EMP documentation and are subject to all terms and conditions contained within the EMP main document. These documents must be available to the authorities for inspection or upon request.

A method statement describes the scope of the intended work in a step-by-step description in order for the ECO and the Client to understand the contractor's intentions. This will enable them to assist in devising any mitigation measures which would minimize environmental impact during these tasks. The Contractor must submit the method statement before any particular construction activity is due to start. Work may not commence until the ECO and Client's Representative have approved the method statement.

Where written Method statements are required, they need to be compiled by the contractor for approval by the ECO and Client's Representative. A "Method Statement" is defined as a written submission by the contractor to the Client setting out the plant, materials, labour and method the contractor proposes to use to carry out an activity, in such detail that the Client and the ECO are able to assess whether the contractor's proposal is in accordance with the specifications and/ or will produce results in accordance with specifications.

The method statement may be required to cover applicable details with regard to:

- o Construction procedures
- o Materials and equipment to be used
- o Getting the equipment to and from site
- o How the equipment/ material will be moved while on site
- o How and where material will be stored
- o The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material (of any potential hazardous material) that may occur
- o Disposal of hazardous substances and building materials to appropriately licensed waste disposal facilities
- o Timing and location of activities
- o Control of subcontractors
- o Compliance/non-compliance with the Specifications, and
- o Any other information deemed necessary by the Client and the ECO.

However, the requirement for specific Method statements can only be determined once the On-Site Startup Meeting between the parties has taken place. Please note that a method statement may not be changed or deviated from without documented approval from the Client and the ECO. If approval is also required from DEA&DP, the latter must state the timeframe for such approvals from date of receipt of the Method statement in the Environmental Authorisation in order for the Contractor to build this into the tender documents.

The Contractor must abide by these approved method statements and any activity covered by a method statement must not commence until the Client and the ECO has approved of such method statement. NB: No work may commence or take place until the method statement where required for a specific task has been approved by all relevant parties.

Explanation of method statements and a pro forma method statement sheet that may be completed by the Contractor for each activity requiring a method statement is attached as Appendix 4 & Appendix 5.

7. ENVIRONMENTAL DECLARATION OF UNDERSTANDING FOR THE EMP

The purpose of the Environmental Declaration of Understanding agreement between the Applicant / Client, the Engineer, Contractor and the ECO is;

1. To enforce agreement on compliance by all relevant Parties with the DEA&DP Environmental Authorisation & this Environmental Management Plan.
2. To maintain proof of such an agreement pertaining to the on site requirements of the EMP
3. To spell out the Applicant's responsibility to inform all relevant parties of the DEA&DP Environmental Authorisation & EMP (as per condition of DEA&DP Environmental Authorisation).
4. To protect the environment of the site against environmental damage;
5. To make good any damage to the environment.
6. Ensure that all contractors and sub-contractors are familiar with the EMP & DEA&DP Environmental Authorisation and sign the mandatory Declaration of Understanding indicating their undertaking to work within the management framework to achieve the environmental requirements pertaining to the site as contained in the EMP.

This agreement outlines the obligations on the various parties and forms the basis for the ECO to ensure compliance by all parties with the EMP

8. PENALTIES

The Client (on recommendation by the ECO) reserves the right at all times for the duration of this agreement to impose restrictions and associated penalties on the contractor with respect to the specific nature, timing and extent of construction activities on environmentally sensitive sites that are not in keeping with the contents of the EMP.

In instances of non-compliance with the EMP by the contractor (or any of their employees) or sub-contractor/s (or any of their employees) that move on or off the site, the on-site Environmental Site Officer (ESO) must immediately inform the ECO who will issue a written warning indicating the non-compliance to the contractor.

The Client, in consultation with the ECO, has the prerogative to determine the amount of the penalty, if applicable, in accordance with the Penalties for Non-Compliance Schedule of Tariffs (Appendix 2). Such penalty amount, if applicable, must be produced in writing and presented to the contractor within seven (7) calendar days of the written warning. The Client may recover penalties by deducting the fine from the offending contractor.

The contractor will be responsible for all costs incurred where emergency procedures are implemented to deal with accidents impacting on the environment as well as the rehabilitation of such damage in conjunction with the Client, ECO and Site Engineer. In serious cases, at the discretion of the Client and the ECO, any multiple offences can be added together.

The ECO, after consultation with the Client, may also stop the works or part thereof until the situation is resolved. Please note that no extension of time is claimable by the contractor for such work stoppages due to non-compliance with the EMP. These penalties furthermore do not preclude any prosecution under any law or regulation. This set of procedures must be brought to the attention of, and understood by all relevant on-site personnel during the Environmental Awareness Training Course.

9. RESPONSIBILITY OF THE CLIENT (as the Applicant)

The Client must be responsible for ensuring compliance with the conditions contained in the DEA&DP Environmental Authorisation by any person acting on his behalf, including but not limited to an agent, servant, employee or any person rendering a service to the CLIENT in respect of the activity, including but not limited to contractors and consultants.

The Client is responsible for appointing the ECO, Site Engineer and Contractor for the duration of the construction contract and for ensuring that the Site Engineer and Contractor fulfil their obligations in terms of this EMP. The Client and or its representative must notify DEA&DP and any other relevant authority, in writing, within 24 hours thereof if any condition of this DEA&DP Environmental Authorisation is not adhered to.

10. THE SITE ENGINEER / SITE MAIN CONTRACTOR

The Site Engineer/Site main contractor (whichever is applicable) is responsible for ensuring that the construction contract and daily construction activities as per the original site specifications are implemented in terms of the Construction Phase Environmental Management Plan which includes additional On site Start-Up Meeting agreements.

The Site Engineer/Site main contractor (whichever is applicable) and the ECO are expected to develop a close working relationship and to stay in contact with each other. The Site Engineer issues site instructions to the Contractor and all requests and communications between the ECO and Contractor are via the Site Engineer. The only exception to this is where the ECO needs to issue a "stop works" order on the Contractor or the Site Engineer if serious environmental harm is about to happen or is happening as a result of construction activity. This "stop-works-order" must be confirmed by the ECO as soon as practically possible to all affected construction personnel.

When the ECO is not on site the Site Engineer (assisted by the ESC) will be responsible for implementation of the EMP. Any construction and construction related activities that might lead to damage to the environment should be immediately brought to the attention of the ECO and must be recorded on the ENVIRONMENTAL WEEKLY CHECKLIST (see Appendix 6) by the Site Engineer or the appointed engineer's representative (ESO).

11. THE CONTRACTOR

The Contractor must ensure that all of its sub-contractors, employees, suppliers, agents, etc., are fully aware of the environmental issues detailed in the site EMP. The Contractor must liaise closely with the Site Engineer and the ECO and must ensure that the works on site are conducted in an environmentally sensitive manner and fully in accordance with the requirements of the EMP at all times.

Main bulk service providers such as Telkom and Eskom must be advised of the construction activities as well as the requirements of this EMP and the Contractor must be responsible for their activities conducted within their work areas. All contractors working on site must attend the Environmental Awareness Training Course and have proper and competent contractor supervision during their time of contract. If more than one contractor works on the site

simultaneously, then the responsibility lies on each contractor to adhere to the conditions of the EMP and related documents for the duration of the contract.

The supervisors must work closely with the appointed environmental officer and discuss the daily programme with the appointed environmental officer, taking special consideration of any specific method statement requirements. Any problems that might lead to damage to the environment must be discussed prior to commencement of the activity.

The ECO must ensure that the Contractor has signed the "Declaration of Understanding" (Appendix 3) in this environmental management plan before construction commences.

12. SITE PERSONNEL: ENVIRONMENTAL AWARENESS TRAINING

All daily site construction personnel must attend an on site induction Environmental Awareness Course and training session together with any site specific environmental training they may require to carry out their duties. All contractor and sub-contractor teams involved in work on site must be briefed on their obligations towards environmental controls and methodologies in terms of this EMP, prior to commencement of any construction and construction related activities

The on site Environmental Awareness Training Course session must take the form of an on-site environmental talk and where necessary relevant demonstrations conducted by the ECO. The on-site Environmental Awareness Training Course session must be aimed at all levels of site contractors, sub-contractors and related site workers and site management. In the case of new workers coming on site throughout the construction programme, the site contractor is responsible to ensure that all new labour arriving on site is made aware of the contents of the EMP and is briefed on the contents of the Environmental Awareness Training Course.

13. ENVIRONMENTAL CONTROL OFFICER:

13.1 Frequency of site visits:

An ECO must be appointed for the duration of the construction phase (if required by the DEA&DP Environmental Authorisation). The ECO must comply with the following:

- o Conduct a start-up meeting before construction commences;
- o Conduct an Environmental Awareness Training course for the contractor and labourers;
- o Identify and train a suitably qualified Environmental Site Officer (ESO) who will be permanently on site to monitor the application of the EMP on a continuous basis (if applicable)
- o ECO to monitor the development on weekly basis until development is completed;
- o Conduct a "snag-list" site visit immediately before completion of construction;
- o Conduct a closing down site visit ASAP after completion of the development;
- o Conduct an Environmental Compliance Audit within 6 months after completion of the civil contract.

13.2 Requirements for the Posts:

Environmental Control Officer: [ECO]

- o A suitably qualified environmental practitioner (preferably with a degree in environmental management) with a sound knowledge of the environment & environmental management principles.
- o A person independent from the Contractor, Client or Project Engineer with 10 or more years of environmental site management and able to ensure EMP compliance monitoring experience on construction projects.

13.3 Monitoring responsibilities of the ECO:

- o The ECO will undertake weekly site inspections and to monitor the ESO and assist in environmental tasks to be executed in compliance with the EMP as well as compile the weekly environmental checklists;
- o Is to ensure that the mitigation/rehabilitation measures and recommendations referred to in the DEA&DP Environmental Authorisation are implemented and to ensure compliance with the provisions of the EMP;
- o Must notify DEA&DP and any other relevant authority, in writing, within 24 hours thereof if any condition of the DEA&DP Environmental Authorisation is not adhered to;
- o Is responsible for the environmental issues involved with the construction phase of the project;
- o Co-ordinating any aspect of site activity that may have an effect on the environment;
- o Must work in close conjunction with the Client/ESO/Site representative, contractors and sub-contractors;
- o Must identify and demarcate the impact area i.e. construction footprint area before any construction activities commence;
- o Must demarcate the necessary areas for storage of materials, ablutions, eating areas of contract workers, etc;
- o Must identify 'No go' areas and areas sensitive to erosion and have these areas demarcated. Environmental awareness of the workers is essential. This must be in the form of an on site talk and must be conducted at an appropriate technical level;
- o The ECO will keep a site inspection diary which will be the record of construction progress and environmental compliance and is recorded in the form of an ECO checklist and/or diary entries and photographic records for visual reference. (Appendix 8);
- o These documents must be available to the authorities for inspection upon request. The record must include the outcome of meetings/discussions with the contractor and must reflect environmental queries, agreed actions and dates of eventual compliance. These must form part of the official environmental record.

13.4 Authority of the ECO:

The ECO has the authority to stop works if in his/her opinion there is a serious threat to, or impact on the environment, caused directly by the construction operations. This authority is to be limited to non-compliance to the EMP and emergency situations where consultation with the Client is not immediately available. The ECO is to inform the Client of the reasons for the stoppage and agree on a solution to the problem as soon as possible.

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

13.5 Appointment of an ESO. (Environmental Site Officer)

When necessary the ECO may appoint an ESO to carry out the site inspections and the following will apply:

- o The suitably qualified and trained ESO is appointed prior to commencement of construction activities, site inspections are decided upon between the CLIENT and the ECO depending on the environmental sensitivity of the construction areas and site location.
- o The frequency of site inspections is also determined prior to commencement of works but can change if the need arises.
- o The suitable qualified ESO will perform certain functions related to the continued compliance with the EMP under the guidance and instruction of the ECO.

13.6 Qualifications of an ESO.

The appointed Environmental Site Officer must fulfil the following criteria:

- o Have proven previous experience as an Environmental Site Officer.
- o Have a sound understanding of the contents of the EMP.
- o Must be able to enforce compliance to all relevant site documents.
- o Have a basic knowledge of the NEMA and other relevant information.
- o A construction background would be advantageous.
- o Must be able to work with site personnel and resident engineers.

14: CHANGES TO THE MANAGEMENT PLAN

Although care has been taken to address all known relevant environmental issues for the construction phase, it may become necessary to add or amend certain procedures or instructions to improve the efficiency of the Environmental Management Plan (EMP). Only those additions or amendments of this EMP that will either improve environmental protection or can be proven not to have any negative effect to the immediate and surrounding environment will be considered.

Changes or deviations furthermore have to be motivated in writing by means of a motivation report and the same procedures for acceptance as in the case of a standard Method Statement have to be followed. If any additions or amendments must be submitted to DEA&DP for approval, this must be stipulated in the environmental authorization with a stipulated timeframe of approval so that this can be included in the tender specifications for the Contractor. No deviation from the contents of the EMP is allowed without the above-named prescribed procedures

15. RECORD KEEPING

All records relating to the implementation of this management plan (e.g. Declaration of Understanding, ECO Checklist and/or diary, Method Statements, etc.) must be kept together so that it can be retrieved easily. These records must be available for scrutiny by any relevant authorities.

Photographs

Photographs are to be taken of the site prior to, during and immediately after construction, as a visual reference. These photographs must be stored with other records related to this EMP. Any environmental non-compliance reported must have the support of sufficient photographic proof to mitigate the non-compliance report.

16. ENVIRONMENTAL COMPLETION STATEMENT

An Environmental Completion Statement is a report by the ECO/Environmental Consultant to the relevant authorities stating completion of the project and compliance with the EMP and conditions. The following environmental statements may be required to be completed on completion of all site construction activities and submitted in line of sequence to the relevant office for perusal and reference. The required completion statements must be discussed and agreed upon at the On-site Start-up Meeting.

16.1 ECO: Environmental Completion Statement:

The ECO must submit an environmental closing statement relating to all environmental and technical issues that occurred on site as well as any conclusions regarding incidents such as written warnings, stoppages of works and penalty fines.

16.2 Environmental Audit Report

An Environmental Audit Report must be submitted by the Client to the satisfaction of the Department of Environmental Affairs and Development Planning, within six months after construction has been completed and after the sites have been rehabilitated, whichever is applicable.

17. MANAGEMENT SPECIFICATIONS (PROGRAMME)

(This EMP is additional to conditions as set-out in the DEA&DP Environmental Authorisation). As there is no definite information on the type of machinery to be used, the sources of material and finer detail discussed between the relevant parties, the following points are presented to be applicable in the case where such elements of the project merit this.

17.1 Fauna and Flora

The Contractor must not deface, paint, damage or mark any natural features, if these should occur (e.g. trees, rock formations, buildings, etc.) situated in or around the Site for survey or other purposes unless agreed beforehand with the Engineer and the ECO. Any features

affected by the Contractor in contravention of this clause must be restored/rehabilitated to the satisfaction of the Engineer and the ECO

Except to the extent necessary for the carrying out of the works, flora must not be removed, damaged or disturbed nor must any vegetation be planted. Trapping, poisoning and/or shooting of animals is strictly forbidden. No domestic pets or livestock are permitted on Site. All incidents of harm to any animal or natural vegetation (apart from the agreed upon areas) must be reported to the ECO.

Where the use of herbicides, pesticides and other poisonous substances are to be used, the Contractor must submit a Method Statement and these substances may only be used as approved by relevant act and laws.

17.2 Protection and Rescue of Fauna and Flora

The removal of fauna from the site must be done in accordance with the requirements of the applicable Nature Conservation Ordinance regulating these activities. All flora identified during construction to be rescued must be removed and placed in an area specifically allocated for these plants to ensure that the necessary care thereof will take place until being relocated and planted in designated areas. The areas of vegetation that are to be protected during construction must be demarcated and indicated on a site plan. A Method Statement may be required from the Contractor, detailing the method of fencing for protection of the conservation areas.

17.3 Clearing of Vegetation, Stripping & Conservation of Topsoil

A Method Statement may be submitted detailing the methods to be used for vegetation clearing. All cleared areas must be stabilised as soon as possible. Burning of cleared vegetation on site is prohibited. The burying of cleared vegetation or use as part of backfill or landscape shaping is prohibited unless written approval is obtained from the ECO.

Cleared vegetation may be used for mulch or slope stabilisation of the Site. Should bulk vegetation be removed from the designated working areas (foot print area) then tall vegetation shall first be removed through brush cutting and chipping of larger shrub material; this may be added to the topsoil material stockpiles as mulch. Unless otherwise agreed upon, only indigenous plant material shall be used for this purpose.

Prior to any activities within the demarcated work areas, topsoil material shall be removed to a depth of 300mm or deeper if specified by the engineer in consultation with the ECO, and stockpiled in a designated area for use in rehabilitation of the site post construction. Any area where the topsoil will be impacted by construction activities, including the construction of offices and storage areas, must have the topsoil stripped and removed and covered with herbaceous vegetation (other than alien species), overlying grass and other fine organic matter and stockpiled for subsequent use in rehabilitation.

Topsoil storage areas must be convex and should not exceed 2m in height. The Contractor must ensure that the material does not blow or wash away. Topsoil must be treated with care, must not be buried or in any other way be rendered unsuitable for further use (e.g. by mixing with spoil) and precautions must be taken to prevent unnecessary handling and compaction. In particular, topsoil must not be subject to compaction greater than 1 500 kg/m² and must not be pushed by a bulldozer for more than 50 m. Trucks may not be driven over the stockpiles.

Topsoil from different soil types must be stockpiled separately and replaced in the same areas from which they were taken if this proves to be the case. Specific attention should be given to the areas that may house rare and threatened species. Topsoil areas must be demarcated in order to ensure the safekeeping of topsoil and to separate different stockpile types.

17.4 Protection of Archaeological & Paleontological remains

If remains or artefacts are discovered on Site during earthworks, work in the vicinity must cease immediately and the Contractor must immediately inform the Engineer and the ECO who must contact the South African Heritage Resources Agency (SAHRA) for information on the appropriate course of action to be taken.

In the event that previously unknown archaeological features are exposed during the construction phase, the Contractor should inform the Engineer and the ECO who will advise the Client on the necessary course of action.

Note that the Contractor may not, without a permit issued by the responsible heritage resource authority, destroy, damage, excavate, alter, deface or otherwise disturb any archaeological site or archaeological material. The latter is a criminal offence under the Heritage Resources Act.

17.5 Appropriate use of Machinery

Contractor must at all times carefully consider what machinery is appropriate to the task while minimizing the extent of environmental damage. The contractor may not operate any machinery including a fuel driven compressor outside the demarcated area. Where practical, all maintenance of plant and machinery on Site must be performed in workshops. If it is necessary to do maintenance outside of a workshop area, the Contractor must obtain the approval of the Engineer and the ECO prior to commencing activities.

All vehicles and equipment must be routinely inspected for fuel and oil leaks and kept in good working order and serviced regularly. Leaking equipment must be repaired immediately or removed from the Site. When servicing equipment, drip trays must be used to collect the waste oil and other lubricants. Drip trays must also be provided in construction areas for stationary plant (such as compressors) and for "parked" plant (such as scrapers, loaders, vehicles). Drip trays should be kept free of water that will float the oil to overspill. All drip trays/bungs to attain a 120% capacity of the plant fuel/oil capacity.

Appropriate 2.5kg (minimum requirement) dry powder SABS approved and service certified fire fighting extinguishers must be easily available at strategic points on the site such as the site office, fuel stores, etc.

17.6 Demarcating and fencing

Final site demarcation must be carried out with all relevant parties (who will be responsible) present for the day-to-day activities on the site and may include:

The Client or his delegated Representative
 Environmental Consultant
 Main Contractor or his delegated Representative

Sub-contractor
 Environmental Control Officer
 Environmental Site Officer (if applicable)

The proposed site will be demarcated prior to the commencement of any construction or earth-moving activities and this includes site establishment, the moving of construction material or any other items onto the site, etc. The site will be demarcated with appropriate strong steel dropper poles. A single strand of orange baler twine is to be attached to the dropper poles to indicate boundaries and no-go areas for site personnel and vehicular movement. (Alternative fencing may be decided upon dependent on site requirements).

The construction area i.e. road, stockpile areas and development footprint etc. must be demarcated and fenced off with steel dropper poles and orange baler twine approximately 1m high is considered adequate. The demarcation will be agreed on during the start-up meeting. All fencing and fence placement/positioning must be approved by the ECO on site. Work areas and access routes must be clearly demarcated to minimise environmental impact.

NB Steel dropper poles and orange baler twine has proven to be the most environmentally friendly means of on site demarcation.

In the event that sensitive features are threatened by construction activities, temporary fencing off of these areas (for individual areas such as trees or rocks) or the construction area (when working in a mainly natural environment) is recommended.

The Contractor must maintain in good order all demarcation, fencing and barriers for the duration of construction activities, or as otherwise instructed. Any temporary fencing removed for the execution of any portion of the works is to be reinstated by the Contractor as soon as practicable. The Contractor at the end of the contract must remove all demarcation, fencing or barriers not forming part of the final works on Site. Once in place the demarcation barriers must be maintained and may not be moved or altered without consultation with the site ESO and the main contractor

17.7 "NO-GO" Areas

"No-go" areas, if so designated by the EMP, DEA&DP Environmental Authorisation or On Site Start-Up Meeting, are certain pre-determined areas that must be demarcated and avoided by machinery and personnel. The contractor is responsible to ensure that no person, machinery, equipment enter the "No-Go" areas at any time during the contract period.

Areas of special importance will be decided upon between the Engineer, Contractor and the ECO and demarcated as "No-go" areas on a site plan and fenced off. Such areas are out of bounds to the Contractor and his staff, sub-contractors and their staff or suppliers and their staff and to any other person involved in the construction, without the written permission specified by the ECO.

17.8 Water, Storm water, Erosion & Sedimentation Control

The Contractor must take appropriate and active measures to prevent erosion resulting from his own construction activities and operations as well as storm water control measures to the satisfaction of the ECO. During construction the Contractor must protect areas susceptible to erosion by installing all the necessary temporary and permanent drainage works as soon as possible

Occupants on site must have access to safe drinking water. Water to be supplied by the contractor shall be from a legal source and comply with recognised standards for potable and other uses.

It is illegal to discharge water into a public stream if the quality does not conform to the required health or water standards. Other measures as may be necessary must be taken to prevent the surface water from being concentrated in streams and from scouring the slopes, banks or other areas. All potential hazardous fluids/materials must be protected from the rain to prevent them being washed into storm water channels. All such measures must be discussed with and approved by the ECO.

17.9 Fuel, Tar Compounds and Oil

No fuels and flammable materials are to be stored on the site. Basic guidelines to follow if any fuels are to be stored are as follows:

- o These areas must comply with general fire safety requirements.
- o All vehicles, equipment, fuel and petroleum services and containers must be maintained in a good condition that prevents leakage and possible contamination of soil or water supplies. Drip trays are to be used in these storage areas to prevent contamination of the ground in the event of spillages or leaks
- o All plants/fuel tanks must have a bund or drip tray present (whichever is applicable) to use in the event off accidental spillage of oils and fuels and must contain a capacity level of 120% of the capacity of the plant fuel and oil tanks.
- o A suitable leak proof container for the storage of oiled equipment (filters, drip tray contents and oil changes etc.) must be established.
- o Fuels and oils must be safely located in a designated area out of harms way from the elements and safety and fire prevention must be strictly adhered to.
- o All spills are to be recorded in the ESO diary.

Fuel Storage proposals must be cleared by the ECO before any storage or stockpiling takes place.

17.10 Hazardous Substances

If potentially hazardous substances are to be stored on site, the Contractor must provide a Method Statement detailing the substances/materials to be used, together with the storage, handling and disposal procedures of the materials to the Engineer and the ECO.

Paints: - No paint products may be disposed of on Site and brush/roller wash facilities must be established to the satisfaction of the Engineer and the ECO. Oil based paints and chemical additives and cleaners such as thinners and turpentine must be strictly controlled. A Method Statement detailing the paint management procedures is required.

Hazardous building materials: - Hazardous building materials (e.g. asbestos, fibre claddings, refrigerants, coolants, sub-station cooling oils, etc) must be identified and dealt with in accordance with the relevant safety and health legislation. All such material must be separated on Site and disposed off at appropriate licensed disposal sites. The Contractor must supply the ECO with a certificate of disposal. Hazardous materials should be stored under lock and key in designated areas with properly displayed and visible warning signs.

17.11 Concrete Works

The Engineer (in collaboration with the ECO) must indicate the permitted location of batching plants (including the location of cement stores and sand and aggregate stockpiles), if these are to be present on Site, on a site plan. A Method Statement indicating the layout and preparation of such facilities may have to be submitted.

Cleaning of equipment and flushing of mixers must not result in pollution of the surrounding environment. All wastewater resulting from batching of concrete must be disposed of via the contaminated water management procedure. Used cement bags must be stored in weatherproof containers to prevent wind dispersion and water contamination. Used cement bags must be disposed of on a weekly basis via the solid waste management system, and must not be used for any other purpose. Cement bags may not be disposed of on-site, but removed on a weekly basis to an approved dumpsite.

All visible remains of excess concrete must be physically removed and disposed of on completion of cement work. Washing the remains into the ground is not acceptable. All excess aggregate must also be removed.

The following recommendations must be implemented to minimise impact.

- o The concrete mixing must take place on top of boarding and/or sheeting so as to protect the ground. This board and or sheeting must be removed from the site once the mixing is complete.
- o Concrete batching to take place at identified areas only in consultation with the ECO.
- o Cement contaminated water may not enter a natural or man-made (e.g. trench / sloop or dam) water system. Preventative measures include establishing sumps from where contaminated water can be either treated in situ or removed to an appropriate waste site.
- o Dry mixing batching areas to be carefully placed in consultation with the-ECO.
- o If possible/appropriate ready mix concrete must be used.
- o Cement bags are to be stored securely out of harms way from the elements (wind and rain). Bags have to be covered and placed on plastic sheeting.
- o Sand and stone to be stored on plastic if it is stored outside the future fenced off site.
- o Excess or spilled concrete must be confined within the works area and then removed to a waste site.
- o Wash-down areas must be confined to within the concrete batching area only.

NB: In the event of Ready Mix concrete deliveries taking place on site the site foreman must ensure that no wash-down of ready mix trucks takes place on or around the site except, as a last resort, at the concrete batching area where concrete waste water may be contained into the existing bunding pit. Any alternative method of disposal must be approved on the basis of Method Statement to be submitted for the approval of the ECO via the ESO.

17.12 Blasting / drilling

In the event where blasting or rock drilling is required, the following recommendations must be implemented:

- o A Method statement may have to be provided for each case separately prior to commencement of blasting works.
- o The contractor must take all necessary precautions to prevent damage to special features and the general environment, which includes the removal of fly rock.
- o The contractor must ensure that no pollution results from drilling operations, either as a result of oil and fuel drips, or from drilling fluid. The contractor must take all reasonable measures to limit dust generation as a result of drilling operations.
- o The ECO must be given 24-hour notice before blasting events.

17.13 Fires and smoking

No fires are allowed on site. If smoking is to be allowed on site then arrangements must be made for disposal of cigarette butts. No smoking will be allowed outside the agreed upon areas. Adequate fire fighting equipment according to the fire hazard during the construction period must be available on site and in good working order (at least one type ABC (all purpose) 10 kg extinguisher and two fire beaters per working area). The persons on site must be trained in the use of such equipment.

The main contractor must provide a list of all authorities involved in fire fighting in the region. This list must include emergency contact numbers and must be visible at the site office. It is required that contractors have available [if there is cell phone reception] the emergency telephone numbers of the nearest local Fire Fighting Station and that an emergency fire fighting re-action plan has been drawn up with on site workers and the resident land-owner.

Welding, gas cutting or cutting of metal will only be permitted inside the working areas. The Contractor must pay the costs incurred to organizations called to put out any fires started by him. The Contractor must also pay any costs incurred to reinstate burnt areas as deemed necessary by The Client.

17.14 Emergency Procedures

It is the responsibility of the contractor to assess the potential risks to the environment as a result of the project. As such, the contractor must have the necessary standard emergency operating procedures in place to deal with any potential emergency such as oil spills or fire.

All staff should be made aware of the necessary basic emergency procedures in the event of an emergency including injuries to staff. The appropriate equipment and identified personnel to deal with such basic emergencies should be available on site.

Fire: The Contractor must advise the relevant authority of a fire as soon as one starts and must not wait until he can no longer control it. The Contractor must ensure that his employees are aware of the procedure to be followed in the event of a fire.

Spills: The Contractor must ensure that his employees are aware of the procedure to be followed for dealing with spills and leaks, which must include notifying the Engineer, the ECO and the relevant authorities. Treatment and remediation of the spill areas must be undertaken to the reasonable satisfaction of the ECO and Local Authority.

17.15 Dust Control

The Contractor must take all reasonable measures to minimize the generation of dust as a result of construction activities (including dust generated on haul roads) to the satisfaction of the ECO and Local Authority

17.16 Solid Waste Management

No on-site burying or dumping of any waste materials, vegetation, litter or refuse must occur. The Contractor must provide problem animal and-weather proof bins with lids of sufficient number and capacity to store the solid waste produced on a weekly basis. The lids must be kept firmly on the bins at all times. Bins must not be allowed to become overfull and must be emptied at least once a week. Waste from bins may be temporarily stored on Site in a central waste area that is weatherproof and scavenger-proof and which the Engineer and the ECO has approved.

All solid waste must be disposed of off-site at an approved landfill site in terms of the National Environmental Management: Waste Act (Act No. 59 of 2008). The Contractor must supply the ECO with a certificate of disposal. All hazardous waste must be disposed of at a licensed hazardous waste site.

The Contractor must be responsible for the establishment of a refuse control system that is acceptable to the ECO. Disposal arrangements must be made in advance and cleared with the ECO before construction starts. The Contractor must make provision for workers to clean up the Contractor's camp and working areas on a daily basis so that no litter is left lying around and so that the site is in a neat and tidy state. The Contractor must remove from site the refuse collected at least once a week. This requirement must be strictly enforced and special note taken of the penalties applicable in the case of non-compliance.

17.17 Toilets & Ablution Facilities

The Contractor must provide suitable sanitary arrangements near the construction site for all site employees. A minimum of one toilet must be provided per 15 persons-at each working area (station) or as stipulated and approved in the Method Statement. The toilet must be within easy reach (max 300m) of the working area and be in good working condition and cleaned on a daily basis. Toilet paper must be provided and emptied on a weekly basis or when full or when instructed by the ECO on-site, whichever is the appropriate action.

Disposal arrangements must be made in advance and cleared with the ECO before construction starts. Sanitation provision and servicing must be to the satisfaction of the ECO. The Contractor must ensure that toilets are emptied prior to any builders' holidays, and/or weekends. Toilets must be of a neat construction and must be provided with doors and locks and must be secured to prevent them blowing over.

NB No burying of any waste material on or near the construction site nor anywhere on the surrounding property is permitted.

17.18 Stockpiling

Any stockpiling of gravel, cut, fill or any other material including spoil must only be allowed in degraded areas or areas below the future cover of buildings and tar or paved parking

surface. The Contractor must indicate the proposed areas for such operations and method of undertaking such operations in a Method Statement to be submitted to the ECO for approval before any such activity begins. Any area used for stockpiling and not covered by building development must be returned to at least the state they were in before stockpiling and it must be ensured that the erosion potential of these areas is not increased.

The Contractor must ensure that the material does not blow or wash away or mix with each other. If the stockpiled material is in danger of being washed or blown away, the Contractor must cover it with a suitable material, such as hessian, netting or plastic.

17.19 Preparation of Building Material

The Contractor must ensure that any delivery drivers are informed of all procedures and restrictions (including "no go" areas) required to comply with the Specifications. The Contractor must ensure that these delivery drivers are supervised during off-loading, by someone with an adequate understanding of the requirements of the Specifications

All manufactured and/or imported material must be stored within the demarcated area, and, if so required, out of the rain. All lay down areas outside of the construction camp must be subject to the Engineer and the ECO's approval in such a way as not to cause a nuisance or environmental damage. All building materials are to be prepared at the batching plant, to enable the effects of cement and other substances, and the resulting effluent to be more easily managed.

It is essential that any imported material i.e. base material for road works, building sand, bedding base sand for pipe / cable lines etc. must be screened and of which the origins must be identified prior to arriving at the receiving environment, this must be approved by the Engineer / ECO.

17.20 Discharge of construction water

Potential pollutants of any kind and in any form must be kept, stored, and used in such a manner that any escape can be contained and the water table not endangered. This particularly applies to water emanating from runoff from fuel depots/workshops/truck washing areas. Wash down areas must be placed and constructed in such a manner so as to ensure that the surrounding areas are not polluted.

Contaminated water includes water that is carrying excess sediment due to construction activities. The contractor, being responsible for the construction and effective containment and maintenance of settlement ponds must ensure that the surrounding environment is not adversely affected as a result of construction activities. Contaminated water storage facilities must not be allowed to overflow and appropriate protection from rain and flooding must be implemented. Contaminated water that is removed from site must be disposed of at a facility approved by the ECO and Local Authority. No contaminated water that does not meet the water quality standards and criteria under the National Water Act may be released into a natural system, whether it is to surface or groundwater.

All cement effluent from mixer washings, and run-off from batching areas and other work areas must be contained in suitable sedimentation ponds. Sedimentation ponds must be allowed to dry out on a regular basis to allow for solid material to be removed. This material must be disposed of in a suitable manner, depending on the nature of the material, and to the discretion of the ECO.

17.21 Treating (flushing/testing) of Pipelines

Cleaning/sterilization/flushing of pipelines shall not impair surrounding environmental quality. Any contaminated water from such activities shall be contained until it complies with the standards contained in the National Water Act or other relevant Acts, as well as those laid down by the Local Authority. Alternatively, it shall be removed from site and disposed of at an approved waste disposal site.

17.22 Contractors Temporary Camping Site & Eating Areas

The Contractor must designate eating areas for the approval of the ECO, which must be clearly demarcated. No eating of meals must take place outside these designated areas without the approval of the Contractor/ECO. No washing in dams or streams are allowed. The feeding or leaving of food for animals is strictly prohibited. Sufficient waste bins must be present in this area and emptied regularly.

The contractor must supply cooking facilities that are suitable for the environment and are not liable to cause the outbreak of fires. No overnight camping/staying on site is allowed. If overnighting is necessary for security purposes then it must be cleared with the ECO on site.

17.23 Traffic, Access Routes & Haul Roads

The Contractor must control the movement of all vehicles and plant including that of his suppliers so that they remain on designated routes. In addition such vehicles and plant must be so routed and operated as to minimise disruption to regular users of the routes not on the Site. On gravel or earth roads on Site, the vehicles of the Contractor and his suppliers must not exceed a speed of 25 km/h. On public roads adjacent to the Site vehicles will adhere to municipal and provincial traffic regulations.

As far as possible any access routes/haul roads must utilise existing roads or tracks. Any new access roads/haul roads must be designed so as to minimise erosion and must run across slopes and not directly up-hill. All temporary access routes must be rehabilitated at the end of the contract to the satisfaction of the ECO. Method Statements for any new access/haul roads must be submitted

17.24 Site Clean Up and Rehabilitation

The Contractor must ensure that all structures, equipment, materials and facilities used or created on site for or during construction activities are removed once the project has been completed. The construction site must be cleared and cleaned to the satisfaction of the ECO. Immediately after the demolition of the camp site, the contractor shall restore the site to its original state, paying particular attention to its appearance relative to the general landscape. The contractor's procedure for rehabilitation shall be approved by the ECO and Engineer.

This shall include but not be limited to:

- o Earthworks to reinstate the physical characteristics of the site. Here attention to the natural vertical and lateral heterogeneity in landform shall guide the reinstatement of natural areas.

- o Replacement of topsoil material – care shall be taken to ensure that the same material that was removed from each area is replaced there, since this will carry the seed complement appropriate for re-establishment of each plant community type.
- o Final landscaping by machine, but landscaping by hand may be required in many areas under rehabilitation.
- o Re-seeding and / or replanting of rehabilitated areas.
- o The Contractor shall not be permitted to use fertilisers or pesticides unless cleared in a Method Statement and approved by the ECO

It is imperative that any potential erosion problems are addressed. This may require subsequent site visits to monitor the efficacy of erosion control measures.

17.25 Land Management

Vehicles accessing the construction site must be made aware of driving in hazardous road conditions, sharp bends, narrow roads, bad weather, on or near children or domestic animals along the road if this is applicable. Vehicle movements should be kept to a minimum during rain to avoid damage to access roads and oil erosion must be prevented at all times along the access roads and around construction areas.

No fences or gates on the relevant construction property must be damaged. A decision on the open or closed status of all access gates to the property (construction site) must be taken with a view to manage the movement of domestic and/or wild animals on the site. Access by unauthorised personnel should also be controlled.

17.26 Socio-Cultural Issues

Property owners or property occupiers must be treated with respect and courtesy at all times. The cultural lifestyles of the communities living in close proximity to the construction areas must be respected. The Contractor must keep a Complaints Register in which all complaints lodged by outsiders or occupiers on site or adjacent to the site and the action taken with regard to such complaints, is recorded.

17.27 Additional Associated installations

17.27.1 Construction of new access roads

In the event of the necessity for the construction of a new access road to the site the access route must be pre-determined prior to the On Site Start-Up Meeting.

Discussions pertaining to the "Access Road Start-Up Discussion" should include the following but are not restricted to:

- o EMP and contents thereof.
- o Demarcation of the access route.
- o Containment of soil and rock from excavations.
- o Transit areas for excess excavation road materials.
- o Stockpile areas for sub-base and surface material.
- o Earthmoving machinery for specific tasks.
- o Mandatory site equipment.
- o Placing of on site toilet facilities.
- o Specific requests from farmers or the CLIENT and land owners.
- o Dust Pollution.

- o Post construction erosion methods.
- o Site Specific agreements emanating from the Start-Up Meeting.

17.27.2 Eskom/Telkom - Installation of power and communication lines (overhead or furrowing/trenching of AC/optic fibre cables)

In the event of the necessity for the installation of an Eskom/Telkom line, (overhead or the furrowing / trenching of optic fibre/AC cable, the proposed route must be pre-determined prior to the On Site Start-Up Meeting. Discussions at the Eskom power & Telkom line installation Start-Up Meeting include the following but not restricted to;

- o EMP and contents thereof.
- o Establishing the location of the "tap-off" point.
- o Arranging a time for the physical inspection of the Eskom power line/Telkom line route by the ECO with the contractor and site ESO. [If required a representative from the Client may be present as well as the landowner].
- o Establishing suitable stockpile areas for poles, machinery and accessories.
- o Placing of poles on heavy duty plastic.
- o Exit and entry points along the Eskom power/Telkom line route.
- o Method of Pole Drilling, Pole Planting and Stringing phases.
- o Method of approach to pole hole location [i.e. Drive in - Reverse out].
- o Specific requests from landowners or the Client.
- o Mandatory site equipment.
- o Placement and type of site toilets.
- o AC/optic fibre cable furrowing/trenching.
- o Site Specific agreements emanating from the On Site Start-Up Meeting.

18 OPERATIONAL PHASE

There are a number of operational issues that have been identified during the impact assessment process.

The rehabilitated wetland area would need to be managed in order to ensure that a variety of wetland plants thrive in the wetland. The crux of maintaining this biodiversity is coupled to the varying topographical features that has to be maintained in the wetland area. This starts off during the wetland reconstruction phase where it is necessary to create an undulating topographical base that would result in a variety of water depths when filled. The water flow in the wetland also has to be managed so that it will meander through the wetland and not be concentrated to flow in a single channel that would cause short-circuiting of as large section of the wetland.

The water level would also need operational manipulation during the operational phase so that the optimal water levels in time could be maintained. For this reason a water level control structure in the form of weir boards are to be installed at the outlet channel of the wetland area. From time to time in the future years it will also be necessary to manage the vegetative cover and topographical elements of the wetland system to ensure the maintenance and even enhancement of the wetland.

There will also be a section of re-instated fynbos and this would also require operational management, even possibly by means of establishing a fire regime. In addition there will also be plantings of indigenous large trees that occur naturally in the area. The intention of the Overstrand Municipality is to incorporate this rehabilitated area into the Fernkloof Nature

EnviroAfrica

Reserve and enter into a stewardship agreement with Cape Nature. This agreement will also have certain environmental requirements attached to it.

With regard to the other operational issues of noise, parking and financial viability, the Overstrand Municipality has indicated that they will manage the approval of events and conditions pertaining to events organisers. The municipality will also be responsible for administering noise and traffic control of the public recreational area.

APPENDICES:

- Appendix 1: SITE START-UP REPORT
- Appendix 2: PENALTIES FOR NON-COMPLIANCE
- Appendix 3: DECLARATION OF AGREEMENT
- Appendix 4: INFORMATION ON METHOD STATEMENTS
- Appendix 5: EXAMPLE OF METHOD STATEMENT
- Appendix 6: CONTRACTOR/S REPRESENTATIVE: ENVIRONMENTAL WEEKLY CHECKLIST
- Appendix 7: BASIC RULES OF CONDUCT
- Appendix 8: ENVIRONMENTAL SITE WEEKLY REPORT/CHECKLIST
- Appendix 9: DEA&DP ENVIRONMENTAL AUTHORISATION.
- Appendix 10: RECOMMENDATIONS AS PER ENVIRONMENTAL IMPACT REPORT
- Appendix 11: CLIENT PROJECT STANDARD ENVIRONMENTAL SPECIFICATIONS
- Appendix 12: DRAWINGS (SEE EIA REPORTS).
- Appendix 13: OTHER DOCUMENTS.

APPENDIX 1: START-UP REPORT

TO BE INCLUDED AFTER START-UP MEETING

APPENDIX 2: PENALTIES FOR NON-COMPLIANCE

The contractors / sub-contractors must contact the ECO at any stage if unsure about any matter, or if a pollution incident occurs, or vegetation or animals are damaged.
 ECO = Environmental Control Officer ESO= Environmental Site Officer

PHASE	Penalty for Non-compliance	
	Bottom range	Top Range*
PRE-CONSTRUCTION PHASE		
Construction area to be marked off before construction starts.		5000
The demarcated area must be maintained throughout the construction phase	500	1000
Site area for stock piling of building material must be demarcated	500	5000
Site area for storing of waste material must be demarcated	500	5000
Fencing off the construction site with mesh fencing of 1.8m, where necessary or other suitable material as agreed on by ECO	500	1000
Sitting of access road/s to be approved by ECO & demarcated with stakes before any construction starts (if applicable)		5000
Temporary route used for construction must be determined on site with ECO (if applicable)	1000	5000
Telecommunications & AC power routes must be determined with the ECO (if applicable)	1000	5000
Sensitive features that may be harmed must be clearly marked or demarcated.	500	2000
Vegetation that may not be removed must be clearly marked or demarcated.	500	5000
Contractor must make the Construction team and all sub-contractors aware of all environmental aspects that could lead to imposition of penalties	100	5000
Contractor to sign Declaration of Understanding (DOU) before construction starts		5000
Contractor to assure that all subcontractors be informed and signed DOU	1000	5000
Method statements must be provided on request by the ECO. No work may commence until the Method Statement is accepted by the ECO and Engineer	1000	5000
CONSTRUCTION PHASE		
Information		
A copy of the EMP & Environmental Authorisation with all the conditions of approval and the relevant Method Statements must be at site at all times.	200	5000
Construction crew behaviour		
Construction crews may not overnight on site.	200	5000
No amplified music allowed on site	100	200
Construction crew must stay within the demarcated construction area. (Applicable in sensitive sites)	50	500
Eating of meals only allowed in demarcated area	50	500
No pets permitted on site		100
Driving, Parking & Storing of machinery and vehicles are only allowed inside demarcated areas and existing roads	1000	5000
Machinery may only be used on the road and may not disturb the vegetation on the sides of the road except if cleared by ECO. Machinery used must be carefully considered to limit environmental damage	500	5000
No vegetation other than that agreed on may be damaged - i.e. no access to areas outside construction area.	500	2000
No individual may cause unnecessary damage to flora and fauna on, around or near the site	20	2000
No littering allowed (incl. cigarette butts)	50	500

Excavations		2000
No topsoil may be removed or altered outside the demarcated area and/or which was not specified.		5000
Commercial sources of sand, rock and gravel to be cleared with ECO	200	5000
All surplus material to be taken off-site and be disposed of at approved site	500	5000
Toilets		3000
Sufficient ablution facilities must be provided		1000
Toilets to be secured to prevent them from falling or blowing over.	100	1000
They must be serviced regularly, (according to the manufacturer's instructions) and kept clean.	100	1000
Everybody on site must make use of ablution facilities	50	1000
Fire Prevention		4000
All mandatory fire fighting equipment (as specified at start-up) must be on site at all times	500	2000
Fire fighting equipment to be in good working order and serviced.	500	5000
No fires, including cooking fires, allowed on site	1000	
Concrete & Cement Activities		5000
Wash-down site of Ready Mix delivery trucks must be pre-determined prior to commencement of the activity.	500	5000
Concrete may only be mixed within the boundaries of the bunding area or demarcated area and/or where was agreed on by the ECO.	500	5000
All excess cement & concrete mixes to be contained on construction site and removed from site when necessary or requested by the ECO	200	5000
Any cement / concrete spillage to be cleaned up immediately.	500	5000
Mixing and storage areas must be appropriately located in demarcated area or as agreed upon at the on site Start-Up Meeting	500	1000
Dust pollution control		1000
Ensure that loose building material is covered to prevent dust pollution	100	1000
Water run-off		5000
Contamination of water bodies, rivers, dams or wetlands must be prevented at all cost	500	5000
Rainwater from construction & building site/s must be channelled, contained & allowed to dry out, so as not to transport any pollutants into the surrounding area. Temporary trenches, straw stabilising, brush cutting can be used	500	5000
Waste control		2000
Sufficient refuse bins must be placed on site	500	1000
Refuse bins must be cleaned on a regular basis	100	3000
General litter / building refuse must be cleaned up on a regular basis from the site	500	5000
Cement-contaminated water, paint, oil, cement slurries etc must be stored in watertight containers or as agreed with ECO	500	1000
Store all refuse & waste material in wind & animal proof containers	100	5000
Waste must be disposed of at an official waste deposit site on a regular basis.	500	5000
The absence of or inadequate drip trays or bunding facilities	500	5000
Failure to address oil/fuel leaks from on-site machinery	200	
Herbicides		2000
No herbicides or pesticides whatsoever may be used.	200	
Construction road		5000
Road must be upgraded to prevent degradation and erosion of the road and surrounds.	500	
Power and Telecommunications supply		5000
Demarcate power supply route	500	5000
No vehicles to drive through vegetation unless authorised by ECO	500	5000
Storage of equipment may only take place at an area demarcated by the ECO.	500	5000
Working must be done in phases to prevent trampling of vegetation	N/A	

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Use of generators and fuel powered equipment		
A watertight cover must be placed under the power generator equipment to prevent accidental spillage of fuel & oil seeping into the soil.	500	5000
Drip tray must be able to take 120% of fuel on site	500	5000
All waste material generated from the use of this equipment must be contained and removed from the site	500	5000
Mobile fuel powered equipment must be well maintained and must not have any fuel or oil leaks.	200	5000
Soil Stabilisation		
Ensure that soil material for filling and stabilisation comes from a source that does not contain seeds alien to the area. The source must be cleared with the ECO.	100	2000
Rehabilitation		
Remove rocks and stones and stock pile in area recommended by ECO	500	5000
Remove all plants that can be used for rehabilitation and store on- or off-site in appropriate manner as agreed with ECO	200	5000
Removal of all old concrete and alien materials from site	500	5000
Site must be cleared of all waste and building material	500	5000

*(Large scale / repeated offence)