

HIGH DENSITY RESIDENTIAL DEVELOPMENT ERF 2569 WELLINGTON

1st Draft Environmental Management Programme

DEA&DP LAND MANAGEMENT REFERENCE NUMBER:
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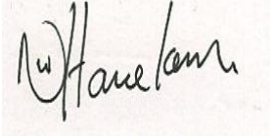
April 2013

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 <p>Environmental Health & Safety Legal Consulting</p>		Title: HIGH DENSITY RESIDENTIAL DEVELOPMENT ERF 2569 WELLINGTON 1 st DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME		
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DECLARATION OF UNDERSTANDING

I,, the undersigned, as duly authorized, have studied and understand the contents of this document, and duly undertake to adhere to the conditions as set out therein, unless specifically otherwise agreed to in writing.

Signed at On this Day of20..

.....
Contractor

I,, the undersigned and duly authorized thereto by the developers, have studied and approved the contents of this document.

Signed at On this Day of20..

.....
Developer's Representative

DEFINITIONS

Auditing:	A systematic and objective assessment of an organization's activities and services conducted and documented on a periodic basis based to a (e.g. ISO 19011:2003) standard.
Biodiversity:	The variety of life in an area, including the number of different species, the genetic wealth within each species, and the natural areas where they are found.
Environment:	A place where living, non-living and man-made features interact, and where life and diversity is sustained over time.
Evaporation:	The change by which any substance (e.g. water) is converted from a liquid state into and carried off as vapour.
Groundwater:	Subsurface water in the zone in which permeable rocks, and often the overlaying soil, are saturated under pressure equal to or greater than atmospheric.
Monitoring:	A systematic and objective observation of an organisation's activities and services conducted and reported on regularly.
Natural vegetation:	All existing vegetation species, indigenous or otherwise, of trees, shrubs, groundcover, grasses and all other plants found growing on a site.
Pollution:	The result of the release into air, water or soil from any process or of any substance, which is capable of causing harm to man or other living organisms supported by the environment.
Protected Plants:	Plant species officially listed on the Protected Plants List (each province has such a list), and which may not be removed or transported without a permit to do so from the relevant provincial authority.
Red Data Species:	Plant and animal species officially listed in the Red Data Lists as being rare, endangered or threatened.
Rehabilitation:	Making the land useful again after a disturbance. It involves the recovery of ecosystem functions and processes in a degraded habitat. Rehabilitation does not necessarily re-establish the pre-disturbance condition, but does involve establishing geological and hydro logically stable landscapes that support the natural ecosystem mosaic.

ACRONYMS

DEA&DP:	Department of Environmental Affairs and Development Planning
DEA:	Department of Environmental Affairs
DWA:	Department of Water Affairs
ECO:	Environmental Control Officer
EIA:	Environmental Impact Assessment
EM:	Environmental Manager
EMP:	Environmental Management Programme
EMS:	Environmental Management System
EO:	Environmental Officer
I&AP:	Interested and Affected Party
IEM:	Integrated Environmental Management
IEMF:	Integrated Environmental Management Framework
PM:	Project Manager
PSP:	Professional Service Provider
EA:	Environmental Authorization
SABS:	South African Bureau of Standards
SANS :	South African National Standards

CHAPTER 1

EXUCUTIVE SUMMARY

This report has been prepared in compliance with the requirements the National Environmental Management Amendment Act 62 of 2008, especially section 24N and Section 34 of the National Environmental Management Act 107 of 1998.

The EMP should be included in all contract documentation for the construction phase of the development.

Eco Impact is fully independent and has no interest in the business nor receives any payment or benefit other than fair remuneration for the task undertaken as required in terms of the Regulations

This report has been prepared by Johmandie Giliomee, of Eco Impact Legal Consulting, an environmental consultancy, engaged in providing professional services in the field of environmental planning, -systems, -auditing and -biodiversity assessment and -management.

Johmandie Giliomee holds a Baccalaureus Technologiae Degree (Cum Laude) in Nature Conservation from the Cape Peninsula University of Technology (2008).

She has completed the following short courses at the Centre for Environmental Management;

- Implementing Environmental Management Systems (ISO 14001)(2009);
- Occupational Health and Safety Law for Managers (2010);
- Implementing an OHS Management System based on OHSAS 18001 (2010)

- Occupational Health and Safety Management System OHSAS 18001 Audit:
- A Lead Auditor Course Based on ISO 19011 and ISO 17021 (2011).

Johmandie has trained as an Environmental Assessment Practitioner since March 2009 and has been involved in the compilation, coordination and management of Basic Assessment Reports, Environmental Impact Assessments, Environmental Management Programmes, Waste Licence Applications, Water Use Licence Applications and Baseline Biodiversity Surveys for numerous clients.

Johmandie has also been involved in conducting environmental and occupational health and safety legal compliance audits for a number of clients.

Environmental Management Programmes (EMP's)

From the 1960's onwards there has been a growing awareness of the complexity of impacts as a result of development and construction projects on the environment. Integrated Environmental Management (IEM) is designed to ensure that the environmental consequences of projects are understood and adequately considered in the planning, implementation and management of development projects. IEM is intended to guide the development process and resolve or lessen any negative environmental impacts and enhance positive impacts of a development project.

The unique environment is our greatest asset. For the prosperity and well-being of current and future generations, this asset must be managed in a sustainable manner for, and to the benefit of all.

The IEM guidelines aim to ensure upfront environmental input during planning and construction and subsequent input during operation and maintenance. EMP's are the tools that facilitate appropriate environmental input during the construction and operation phase of the civil engineering projects, and thus form a crucial component of the IEM process and the ultimate attainment of sound environmental practice during all phases of the operation.

WHAT IS THE ENVIRONMENT?

The environment comprises all living and non-living surroundings such as water, buildings, soil, plants, cars, air, humans and their inter relationships. It is important to realize that people form an integral part of the environment.

Purpose of an EMP and Legal compliance:

In 1989, the Department of Environmental Affairs and Tourism promulgated the Environment Conservation Act in order to address potential impacts associated with a development project.

In 1998, the Department of Environmental Affairs and Tourism promulgated the National Environmental Management Act in order to better address potential impacts associated with a development project. Section 2 describes the principles set out in this section as apply throughout the Republic to the actions that may significantly affect the environment. Section 28 describes the duty of care and remediation of

environmental damage. Section 34 describes the criminal procedures to follow if an offence is committed.

In 2006, Regulation 385 of the National Environmental Management Act was published and identifies certain activities that could have a significant detrimental impact on the environment.

This Act aims to ensure that developments are undertaken responsibly, and with minimal impacts on the environment.

Any project that involves any of the activities specified in the Act must pass through the environmental impact assessment (EIA) process and must be approved by the relevant Provincial Authority, the Directorate: Environmental Management within the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP), before construction can start.

DEA&DP adjudicates whether or not the project can go ahead and issues an Environmental Approval with specific conditions of approval of a project.

NOTE: The implementation of the EMP within the project is not an optional additional or “add on” requirement. The EMP is legally binding, integral to the contract and is as important as the engineering aspects of the contract.

Environmental Management Programme

This section of the report is included in compliance with Section 24 N 2 (a) of the National Environmental Management Amendment Act 62 of 2008.

1.1. Project Description

The proposed development will consist of the construction of a new residential housing development with associated infrastructure including; bulk transportation of sewage and water, storm water outlets and the construction of access roads.

1.2. Qualifications of Contractors and Staff

Contractors and staff are appointed by the developer for the purpose of the development as described above. Only solvent Contractors and staff with adequate experience and who can satisfy the Developer of such prior experience will be appointed. The Contractors and staff must investigate and comply with all existing regulations and laws and by laws unless the relevant authority grants specific written authority waiving compliance with any legislation.

1.3. Responsibility of Managers, Contractors and Staff

Managers, Contractors and staff are at all times responsible for their sub-Contractors and employees, guests, invitees and agents, as well as any person making deliveries to site, while on site. Any damages caused by own employees, sub-contractors employed or delivery vehicles delivering materials will make the contractor liable for any damages that may occur within the development area. Any

damages to property caused by the Contractor or staff, his sub-Contractors, agents, employees, guests or invitees is the responsibility of the Contractor and management, and the Contractor or manager will be responsible for any damage caused to common areas in the immediate surroundings of the development to an extent to be determined by the Developer.

1.4. Plan Controls

The manager must ensure that a copy of the signed and approved EMP is available on site at all times for inspection by the authorities or their empowered representative(s). Any variation to the approved Programme must be submitted to the municipality for signed approval and may only be implemented once the approved variation is available to management and available and displayed on site.

1.5. Advertising

No advertising material may be placed on the development site unless prior written permission has been obtained from the landowner and the ECO.

CHAPTER 2

This section of the report is included in compliance with Section 24 N 2 (d) of the National Environmental Management Amendment Act 62 of 2008.
Issues Relating To the Implementation of the EMP

Organizational Structure

The organizational structure identifies and defines the responsibilities and authority of the various persons and organizations involved in the project. It must be noted that this EMP is applicable to every land owner, from the current owner to any and every future land owner, be it the owner of an erf or any remainder. All instructions and official communications regarding environmental matters shall follow the organizational structure.

From this it can be seen that the Environmental Official, to which the Engineers Representative (ER) and/or ECO shall report and interact shall be the responsible DEA&DP Environmental Official.

The EMP will be an agenda item of the monthly site and operations meetings, and the responsible DEA&DP Environmental Official may attend these meetings in order to provide input with respect to compliance with the EMP and EA. In some instances, an Environmental Consultant may be appointed to provide this input. If at any time the ER and/or ECO are uncertain in any way with respect to an environmental issue or any specification in the EMP and EA, he/she shall consult with the responsible DEA&DP Environmental Official.

Responsibilities and Functions of the Environmental Control Officer (ECO)

The ECO will be responsible for monitoring, reviewing and verifying compliance with the EMP and EA by all Contractors and Site Management.

The ECO duties in this regard will include the following:

With the assistance, where necessary of the ER, to ensure all necessary environmental authorizations and permits have been obtained and are available and visible on site at the ER offices.

- monitor and verify that the EMP and EA is adhered to at all times and by taking action if the specifications are not followed;
- monitor and verify that environmental impacts are kept to a minimum;
- review and approve construction method statements, with input as appropriate from the ER;
- assist the Contractor in finding environmentally responsible solutions to problems;
- give a report back on the environmental issues at the site meetings and other meetings that may be called regarding environmental matters;
- keep records of all activities / incidents concerning the environment on Site in the Site Diary;
- inspect the Site and surrounding areas regularly with regard to compliance with the EMP and EA;
- keep a register of complaints in the Site Office and record and deal with any community comments or issues;
- monitor the environmental awareness training for all new personnel coming onto site;
- advise management on the removal of person(s) and/or equipment not complying with the specifications, after collaboration with the ER. Recommendations must be recorded in Site Instruction Book.
- recommend the issuing of fines by the land owner for transgressions of site rules after collaboration with the ER;
- ensure that activities on site comply with known legislation of relevance to the environment;
- recommend the issuing of penalties via the Land owner for contraventions of the EMP and EA;
- keep a photographic record of progress on Site from an environmental perspective; and
- undertake a continual internal review of the EMP and EA and submit a report to the Land owner and the responsible DEA&DP Environmental Official at the end of the project.

Agreed Work Plan and Site Visit Schedule of ECO

In order to comply with the statutory requirements all permissions granted and plans approved in this regard need to be administratively appraised for incorporation into a site specific and project enabling control and auditing format.

The ECO will be project specific and in the absence of guidelines in the EMP make regular site visits, both scheduled and unscheduled to a maximum of one visit per months, especially initially.

Information recording activity on site, and any guidelines or instructions emanating there from will be routinely made available electronically. Clearly matters of urgency or immediate action may be channelled appropriately on an urgent basis. Auditing and final review reporting during the construction, operational and decommission phases will be yearly.

Engineer

The engineer will have the following environmental control responsibilities:

- In conjunction with the ECO will present the environmental education programs to all persons employed on site.
- Consult with the ECO, landowner/Land owner and any Contractor to resolve all environmental issues.
- Issue any instructions from the ECO to the management team via a formal site instruction book or appropriate management tool used for the purpose.
- Take responsibility for the penalty system. The ECO and landowner / Land owner recommendations must be considered when deciding whether or not to impose a penalty.
- The Engineer will, via the ECO actions, be accountable for the overall implementation of the Environmental Management Programme.

Contractors

As part of any tender, the Contractor must submit a first draft of a Contractor's Programme, which must include environmental considerations he is to follow.

The appointed Contractor's representative will have the following responsibilities:

- Ensure that all staff is familiar with the Environmental Management Programme, which explains the environmental policy for the project.
- Allow for sufficient time between surveying the exact locations where services will be intended and actual construction, for the ECO to facilitate and instruct for the removal of plants, seeds and cuttings if necessary.
- The Contractor shall keep his personnel fully aware of environmental issues and ensure they show adequate consideration to all environmental aspects.
- Establish environmental signs to be erected on the construction site at locations identified by the ECO and approved by the Engineer.
- Be responsible for the cost of the restoration of any damage caused, in environmentally sensitive areas, as a result of Contractor responsibility regarding negligence. This shall be done in accordance with the Engineer / ECO's specifications.
- Take responsibility and active steps to avoid any increase in the fire hazard.
- The Contractor shall take responsibility for implementing all the relevant provisions of the EMP, or if he encounters difficulties with the specifications, he must discuss alternative approaches with the ECO and Engineer prior to proceeding.

- Failure to comply with the EMP may result in the application of fines (as set out), and any reported non-compliance may result in the suspension of work or termination of a contract by the Engineer.

Responsibilities and Functions of the Engineer's Representative

Although the ECO is responsible for monitoring, reviewing and verifying compliance with the EMP and EA by management, the Project Engineer via the ER will assist the ECO to ensure compliance with all protocols and will further assist by indicating areas of concern or in need of attention whenever necessary.

Record keeping of Activities, inclusive of recording of non-Compliances and Corrective Actions

The ECO/Project Engineer will keep a record of all activities relating to environmental matters on site, including: meetings attended, method statements received and approved, issues arising on site, cases of non-compliance with the EMP and EA together with corrective action taken and penalties issued. This information will be recorded in an appropriate manner by the ECO/Project Engineer in a site diary, registers, issues/ warning book, etc. In addition, the ECO and Project Engineer is to undertake monthly checks on Site in order to ensure compliance with the EMP and EA.

Internal review

An internal review procedure will be established by the ECO and Land owner to monitor the progress and implementation of the EMP and EA. Any modifications to the EMP and EA will be issued as variation orders via the Site Instruction Book and registered in the records, usually upon completion of the mandatory six monthly audits.

Compliance with other legislation

It is important that staff is aware of other legislation that may relate to the activities taking place on Site. A more detailed Legal Register to ISO standards should be compiled.

CHAPTER 3

Applicable Legislation, Policy and Environmental Principles

3.1. APPLICABLE LEGISLATION IDENTIFIED

CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA, 1996
 ATMOSPHERIC POLLUTION PREVENTION ACT, 45 OF 1965
 ENVIRONMENT CONSERVATION ACT, 73 OF 1989, (NOISE)
 NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT, 39 OF 2004
 CONSERVATION OF AGRICULTURAL RESOURCES ACT, 43 OF 1983
 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 59 OF 2008
 FENCING ACT, 31 OF 1963
 FERTILIZERS, FARM FEEDS, AGRICULTURAL REMEDIES AND STOCK
 REMEDIES ACT, 36 OF 1947

NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 10 OF 2004
NATIONAL FORESTS ACT, 84 OF 1998
NATIONAL VELD AND FOREST FIRE ACT, 101 OF 1998
HAZARDOUS SUBSTANCES ACT, 15 OF 1973
NATIONAL BUILDING REGULATIONS AND BUILDING STANDARDS ACT, 103 OF 1977
NATIONAL ENVIRONMENTAL MANAGEMENT AMENDMENT ACT, 62 OF 2008
(GENERAL APPLICATION)
NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 107 OF 1998
(ENVIRONMENTAL IMPACT ASSESSMENTS)
NATIONAL HERITAGE RESOURCES ACT, 25 OF 1999
NATIONAL ROAD TRAFFIC ACT, 93 OF 1996
NATIONAL WATER ACT, 36 OF 1998
WATER SERVICES ACT, 108 OF 1997

3.2. Environmental Policy

An environmental policy is derived from the guiding principle whereby an organization defines the scope of its commitment to the environment. The policy is a public document that communicates the organization's overall approach to managing its interaction with the environment.

Various components of Environmental Management are strongly influenced by the policy in terms of their scope and level of resource allocation. As a rule, objectives and targets are set to achieve compliance with the environmental policy, and overall environmental performance is evaluated against the organization's stated intent reflecting a level of commitment.

Policy must meet the following criteria:

- It must be relevant to the nature of an organization's activities, and the specific environmental aspects associated with those activities;
- It must consider specific local environmental conditions;
- It must consider relevant environmental legislation;
- It must define and formulate the organization's fundamental approach to environmental management ; and
- It must set a precedent for communication and liaison with all stakeholders.

3.2.1. Method Statement

Contractors shall provide written statements for discussion with the Engineer, ECO, staff and Contractor, and for final approval by the Engineer on environmentally sensitive aspects of the contract. Environmentally sensitive aspects include by example excavations, work close to sensitive areas, collection and storage of top soil and vegetation, erosion control, wash water control, waste control, etc.

Methods Statement (MS) Content

It is important to note that the ECO may request further methods specification, if it be deemed necessary in his view.

- MS to specify the fire drill procedure to be followed in the event of a fire.
- MS to state how pollution will be prevented from entering any environmental system. To include the size of conservancy tanks and methods of filtering out pollution such as oil, petrol and waste from any working areas or roads.
- MS to specify special measures that will be needed in the event of large pollution spills.
- MS to indicate the timing and sequence of events to follow in sensitive areas to give sufficient time for the ECO to survey these areas and remove plants.

The Method Statement must include a Site plan, Preparatory steps, Materials, and Supervision details.

CHAPTER 4

This section of the report is included in compliance with Section 24 N 2 (e) of the National Environmental Management Amendment Act 62 of 2008.

Compliance

4.1. MONITORING AND AUDITING

4.1.1 Introduction

In keeping with current environmental and associated legislation, all environmental management procedures and actions must be reviewed and refined on an on-going basis. This is in accordance with the dynamic nature of environmental management and allows for the timeous identification and mitigation of issues as they come to light. The process of review and refinement, built into the requirements of the EMP, is known as Monitoring and Auditing.

4.1.2. Roles and responsibilities

Efficient implementation of the Performance Specifications, effective Monitoring and Auditing, as well as clear Responsibility and Accountability allocation requires that various role-players be defined for a construction, operational or decommission implementation project. Depending on the nature and scale of a project, implementing teams could be composed of any number of role-players, each with their own specified responsibilities.

Therefore, for the purpose of this document, the following role-players are defined, based purely on Responsibility and Accountability allocation. The actual designation of role-players may vary, but the responsibilities will largely remain as stated.

4.1.2.1. Landowner or Custodian of the Land

The Landowner or Custodian of the Land is the person or organization with decision making capacity for the land in question, and thus ultimately accountable for what takes place on that land.

4.1.2.2. Developer or Implementing Agent

The person or organisation who will fund, and or be responsible for the implementation of the project or activity, is the Implementing Agent.

Ultimately the liability associated with environmental compliance rests with the Land owner for Implementing Agent. Hence, the Implementing Agent must ensure that the requirement for Environmental Compliance is clearly defined in the Terms of Reference for the Contractor and all staff.

4.1.2.3. Contractor

Contractors as successful tenderer are appointed by the Implementing Agent to undertake the Works as specified in the Contract. It is the responsibility of the Contractor to do whatever is necessary from his side to ensure that he or an appointed advisor is well versed in environmental studies so that he may accurately and efficiently carry out the requirements of the Environmental Specification.

The Contractor is liable for any and all remedial Work required in terms of the Environmental Specification, resulting from his environmental negligence, mismanagement and / or non-compliance.

4.1.2.4. Environmental Control Officer

An Environmental Control Officer will manage and undertake regular environmental inspections for the duration of the project, both for construction, operation and decommissioning as required.

The primary role of the Environmental Control Officer is to act as quality controller regarding all environmental concerns. In this respect, the ECO is to conduct periodic site inspections, attend regular site or operation meetings, pre-empt problems and suggest mitigation and be available to advice on incidental issues that arise.

The Environmental Auditor is required to conduct compliance audits, verifying the monitoring reports as submitted by the Environmental Site Officer.

The Contractors or line management are answerable to the Environmental Control Officer for non-compliance with the Performance Specifications. The Environmental Control Officer provides feedback to the Engineer, who in turn reports back to the Implementing Agent or his Land owner and general public Interested and Affected Party's, as required.

Issues of non-compliance raised by the ECO must be taken up by the Project Manager, and resolved as per the conditions of his contract.

Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation, not allowed for in the Performance Specification) must be endorsed by the Project Manager.

4.2. The Monitoring Procedure

Environmental Monitoring is the continuous evaluation of the status and condition of environmental elements. Its purpose is to detect change that takes place in the environment over time and involves the measuring and recording of physical, social and economic variables associated with development impacts.

To these ends, the Environmental Control Officer will monitor the site for compliance (i.e. Compliance Monitoring) with the Performance Specifications.

Many techniques for Environmental Monitoring have been proposed, each detailing a specific protocol. Regardless of which technique is used, the ultimate aim is that each environmental management specification be checked by means of a system in which a score may be allocated for:

- Full compliance
- Satisfactory performance
- Unsatisfactory performance and
- No action taken

Monitoring will take place at least every month during construction and decommissioning, and every six months during the operational period. Completed Monitoring Reports will be submitted to the Project Engineer and landowner, the Contractor, who will attend to issues, and the Environmental Control Officer, who will ensure that audits are performed at designated intervals. These reports must be kept on file and be made available upon request by the Land Owner / Custodian of the Land and any Environmental Authority or any Interested and Affected Party requesting such.

- All persons employed, the Contractor or his sub-contractors must abide by the requirements of these Performance Specifications as they apply to the Works.
- Any employees, the Contractor or his sub-contractors found to be in breach of any of the Environmental Specifications may be ordered to vacate the site forthwith or be subject to a disciplinary process. The order may be given orally or in writing by the ECO. Confirmation of an oral order will be given as soon as practicable, but lack of confirmation in writing shall not be a cause for the offender to remain on site, or not be subject to a disciplinary process.
- Supervisory staff, the Contractor or his sub-contractor may not direct any person to undertake any activities which would place such person in contravention of the Environmental Authorization and Specifications.

The Contractor and staff are deemed not to have complied with the Performance Specifications if:

- There is evidence of wilful or accidental contravention of any specification included in the Specification.
- There is evidence of the contractor carrying out activities not permitted in terms of the EMP, Contract and / or the Specification.

- There is evidence of environmental negligence and / or mismanagement resulting in negative impacts on the environment.
- Has failed to meet with the requirements of the approved schedule.

The Contractor and landowner will be informed via ECO Monitoring and Auditing Reports as well as by means of direct instruction as to what corrective actions are required in terms of Environmental Compliance:

- Disregard for instruction, and failure to respond adequately to complaints from the public will be construed as non-compliance.
- Non-compliance may lead to the forfeit of the Environmental Authorization or being penalised. In more serious cases, the Project Engineer or ECO may give notice, and then halt operation works until such a time that the upgrade is done and the site comply with the Performance Specifications.
- In cases of persistent non-compliance, the Contractor or staff may be evicted from site after disciplinary process is followed. Only the Land owner of the Implementing agent may issue such instruction, retaining any costs required to remedy situations perpetuated by environmental negligence, mismanagement and / or non-compliance.

4.3. The Auditing Procedure

Environmental Auditing is the process of comparing the impacts predicted with those which have actually occurred during implementation. An Environmental Performance Audit examines and assesses practices and procedures which, in the event of failure, would cause an environmental impact or result in an environmental risk. During each of the lifecycle phases, various issues will be monitored. The Performance Audit will ensure that the monitoring was correctly undertaken and that compliance was best achieved.

To these ends the project will be audit on its environmental management programme for effectiveness. The ISO/SANS 19011:2003 standard will be used.

Audits will routinely be undertaken at 6 months intervals as required in the Environmental Authorization. Audit reports will be submitted to the CEO, who will attend to issues. These reports must be kept on record and be made available upon request by the Landowner / Custodian of the Land and any Environmental Authority or IAP requesting such.

4.4. Retentions and penalties

It is recommended that a retention system be combined with a penalty system to both motivate and compel the contractor and management to adhere to the Environmental Performance Specifications for the duration of the contract.

In this way incentives may be created to perform (i.e. in the form of the retention amounts that will be paid to the contractor only at the end of the contract), without creating the misimpression that adherence to the Environmental Specifications is optional. Persistent non-compliance will not only result in the contractor forfeiting any retention amount, but he will also be fined.

Of importance is that the Contract specifies exactly how the penalty and retention system will operate, as well as how any funds resultant from retentions and penalties will be utilised. All such funds must be used to improve *environmental* conditions on the site in general and not accrue to the Implementing Agent or Developer.

4.5. The retention system

For this system, a percentage value for each of the sections priced for in the Environmental Bill of Quantities is retained until the completion of the Contract Works. If the Monitoring process reveals persistent and/or wilful non-compliance with any aspect of the Environmental Performance Specifications, then the full retention associated with that particular item will be withheld.

The Project Manager may then utilise these retained funds to rectify the problem on site making use of other resources at his disposal.

At the end of the Contract or action, all remaining Environmental Retention amounts will be paid out to the contractor or staff pending approval by the ECO, having confirmed compliance with the relevant Performance and Rehabilitation Specifications.

4.5.1. Penalty System

A system of penalties will be introduced to reinforce environmentally sensitive behaviour. The penalties that may be enforced are listed below. The figures shown are the maximum penalty that will be fined per incident. The penalty will be determined by the severity of the offence.

Any defacing or cutting down trees, existing infrastructure, not specified to be removed	R5000 each
Disturbance to natural veld and wetlands	R1000 / m ²
Catching or harming wild animals	R3000 plus charges at SAPS
Litter resulting from operation	R250 / offence / day
Entering a no-go area on foot	R500
Entering a no-go area in a vehicle	R5000
Making a fire outside an approved fireplace	R20 000
Disposal of any litter or construction material in a no-go or non-specified area	R1000 / m ²
Dumping of cement, concrete, fuel or oil in an area or other than that authorised and suitable	R10 000
Any damage to plant life in a no-go area	R1000
Failure to use portable / toilets	R100 / observed incident or evidence of human excrement in the veld
Any actions contrary to the Environmental Policy which continue after an initial penalty	Termination of contract.

In addition to the above, all costs incurred by the client on behalf of the rehabilitation contract to remedy any damage, will be the responsibility of the offender. Should the Monitoring process reveal acts of persistent and / or wilful non-compliance with the Environmental Performance Specifications, then the Contractor or staff member will be fined according to the specified value of that item.

CHAPTER 5

This section of the report is included in compliance with Section 24 N 2 (e) of the National Environmental Management Amendment Act 62 of 2008.

Registers

5.1. Reporting and Record-Keeping

Good Housekeeping

The Land owner will maintain “good housekeeping” practices during operations.

This will help avoid disputes regarding responsibility and will allow for the smooth running of the operation as a whole. Good housekeeping extends beyond the wise practice of construction and operational methods to include the care for and preservation of the environment within which the site is situated.

Record-Keeping

The Land owner will ensure that an electronic filing system, identifying all documentation related to the EMP, is established.

A list of reports likely to be generated during further phases of the Project is set out below; all applicable documentation must be included in the environmental filing system catalogue or document retrieval index.

- Approved Environmental Management Programme;
- Final design documents and diagrams issued;
- All communications detailing changes of design/scope that may have environmental implications;
- Daily, weekly and monthly site monitoring reports;
- Occupational Health and Safety reports;
- Complaints register;
- Medical reports;
- Training manual;
- Training attendance registers;
- Incident and accident reports;
- Emergency preparedness and response plans;
- Copies of all relevant environmental legislation;
- Permits and legal documents, including letters authorising specific personnel of their duties as Occupational Health and Safety representatives or as part of emergency preparedness teams e.g. fire teams, etc.;

- Crisis communication manual;
- Disciplinary procedures;
- Monthly site meeting minutes during construction;
- All relevant permits;
- EA;
- All Method Statements for all phases of the project.

Document Control

The Land owner will be responsible for establishing a procedure for electronic document control. The document control procedure must comply with the following requirements:

- Documents must be identifiable by organisation, division, function, activity and contact person;
- Every document must identify the person and their positions, responsible for drafting and compiling the document, for reviewing and recommending approval, and final approval of the document for distribution;

All documents must be dated, provided with a revision number and reference number, filed systematically, and retained for a specified period.

The owner will ensure that documents are periodically reviewed and revised where necessary, and that current versions are available at all locations where operations essential to the functioning of the EMP are performed. All documents will be made available to the external auditor. All spills will need to be documented and reported to DWAF and other relevant authorities.

Reporting Requirements

The ECO shall be responsible for monitoring compliance with the EMP and EA. All advice and recommendations made by the ECO shall with the Project Engineer/Engineers compliance be recorded on site in the Site Instruction Book/ suitable register for his attention.

The purpose of this document is therefore to:

- Detail the role of the Environmental Control Officer (ECO) and the Engineer's Representative (ER) with respect to the implementation of the EMP's and EA;
- Provide additional information and checklists.

The ER and/or the ECO must read through and understand the contents of the Guideline Document for the Contractor as well as the EMP and EA specifications in the Contract Document to ensure that the requirements of the EMP and EA are met.

CHAPTER 6

This section of the report is included in compliance with Section 24 N 2 (e) of the National Environmental Management Amendment Act 62 of 2008.

Public Communication Protocols

The Land owner on advice of the Implementing Agent alone shall be responsible for regulating public access to information and compliance reporting. The Land owner alone shall respond to third party or public queries and complaints. The Land owner shall also be responsible for maintaining the Compliance Register to record complaints received and action taken.

CHAPTER 7

This section of the report is included in compliance with Section 24 N 2 (d - g) and 3 (a - b) of the National Environmental Management Amendment Act 62 of 2008.

EMP Management Programme

Construction Phase

Introduction

In order to maintain aesthetics, standards, general appearance, security arrangements and greening processes it is necessary that Contractors adhere to rules and regulations as determined by the Developer and further subject to legislation as applicable in South Africa from time to time.

The Contractor acknowledges that he is working in an environmentally sensitive area and agrees to conform to environmental controls specified from time to time. Strict adherence to these rules in all respects is required and expected at all times.

The applicant must appoint a suitable, experienced and qualified Environmental Control Officer before commencement of any land clearing or construction activities to ensure compliance with the provisions of this Construction Phase EMP.

The ECO appointment contract must:

- Describe the level and type of competency required of the ECO ;
- Define and allocate the roles and responsibilities of the ECO.
- Determine the frequency of site visits;
- Be included in all contract documentation for the construction phase of the development.

Project Description

The proposed development will consist of the construction of a new residential housing development with associated infrastructure including; bulk transportation of sewage and water, storm water outlets and the construction of access roads.

Qualifications of Contractors

Contractors are appointed by the Developer. Only solvent Contractors with adequate experience and who can satisfy the Developer of such prior experience will

be appointed. The Contractors must investigate and comply with all existing regulations and laws / byelaws, unless the relevant authority grants specific prior written authority waiving compliance with any legislation.

Responsibility of Contractors

Contractors are at all times responsible for sub-contractors, employees, guests, invitees and agents, as well as persons making deliveries to sites within the construction areas for the contractor, the constructor's camp, or along access routes thereto on the property. Any damage caused by any of the above persons or delivery vehicles will make the contractor liable for damage that may occur within the property. Any damages to the property including, but not limited to damaged kerbs, roads, street lights, distribution boxes, plants, irrigation, the environment and/ or damage to private property on the property caused by such persons or equipment is the responsibility of the Contractor. In addition the Contractor will be responsible for any damage caused to an extent to be determined by the Developer.

Pre-conditions

The following pre-conditions shall be fully met before any construction activities may commence:

- A site meeting between the Contractors and the representatives of the Developer must take place at least 5 days prior to commencement of construction work to:
 - Demarcate micro construction sites, services routes, access routes, working boundaries and no-go areas;
 - Discuss methods of stockpiling (vegetation, topsoil, sub-soil, shell-grit, etc);
 - Check required toilets and fire-fighting facilities to be in place;
 - Discuss and agree restricted access to construction site;
 - Sign the Declaration of Understanding (Contractors);
 - Discuss and agree communication channels including contact details;
 - Discuss and agree areas of responsibility;
 - Discuss and agree the demarcation and control of construction and building sites.

Minutes of this site meeting must be kept, and are to be distributed to all parties.

The following equipment must be on every micro site before any construction work is due to start:

- Sufficient and suitable chemical toilet facilities.
- Sufficient refuse bins, which are weather and wind proof, with proper lids.
- 1 x type ABC (all purpose) 12.5 kg fire extinguisher

Layout Plan Controls

The Contractor must ensure that a copy of the signed approved layout plan is available at the office on site at all times for inspection by the Developer or his

representative(s). Any variation to the approved layout plan must be submitted to the Developer for signed approval and may only be implemented once the approved variation is available to the Contractor and available on site at the office.

Advertising

The Contractors may place no advertising material on the property unless prior written permission has been obtained from the Developer.

Method Statement

The Contractor shall provide written intent statements, for discussion between the ER, ECO and Contractor, and final approval by the property, on all environmentally sensitive aspects of the contract. This will be done prior to commencing any construction work. The Contractor should note that the time and costs for the compilation and implementation of a Methods statement should be included in this budget. Environmentally sensitive aspects of the contract include e.g. excavations, work close to sensitive areas, pipes, culverts crossing sensitive areas, removal of fill from sensitive areas, collection and storage of top soil and vegetation, erosion control, work in limestone deposits, etc. The Contractor is responsible for preventing flood damage to a maximum of a 1:5 year flood. Some of the Methods Statement (MS) content required is listed below. It is important to note that the ECO have the right to request further additions, should it become necessary.

MS must specify the fire drill procedure that will be followed in the event of a fire.

MS must state how pollution from e.g. oil will be prevented from entering any environmental system. Included here must be the size of conservancy tanks and methods of filtering out pollution from working areas and roads, and further specify measures needed in the event of a large polluting event.

MS must indicate how the installation of services and roads through sensitive areas will be achieved in an environmentally sensitive manner.

MS must indicate how silt in run-off will be prevented from entering the wetlands.

MS must indicate the sequence of construction events into sensitive areas, to allow sufficient time for the ECO and Rehabilitation Contractor to survey the areas and complete mitigation measures.

The Method Statement must include:

- (1) A Site plan
- (2) Description of preparatory steps
- (3) Materials available for combating pollution especially oils
- (4) Supervision levels to be accorded such responsibilities.

Working Hours

Public / Private time

Contractors may only be present on the site during the following public time hours:

	Civil Construction Sites	Residential Construction Site
Mondays to Fridays	08h00 – 17h00	08h00 – 15h00

Saturdays / Sundays / After Hours	Must be arranged and approval sought	
Public Holidays	08h00 – 17h00	08h00 – 15h00

Private time hours are 20H00 – 07H00 weekdays, and after 17h00 Saturdays, Sundays and public holidays, as well as BIFSA builder’s holidays prescribed annually to their members. Should the need arise to amend these times; this must be done with 7 days notice via the ECO to the developer for prior sanction thereto.

Security

The development is located in a secure and controlled environment and therefore individual watchmen will not be allowed on the property during private hours. The property employed security personnel must be fully inducted via the ECO to better understand the EMP environment within which they are required to operate. The Contractor must at all times adhere to the instructions of security personnel employed by the property. Personnel must be transported by vehicle to the relevant construction sites and will not be allowed to walk between sites. Contractor vehicles entering the property must have a clearance disc issued by the property. The ECO must sign in at security, but will not be restricted to working hours or limited to certain areas. This allows for an independent working environment as needed in the nature of his /her work. No security or access control in regards to number of visits and frequency of visits will be applicable to the ECO and it includes all working environments, the property and the Contractor’s camp. It is especially important to visit the Contractor’s camp, since this is the place where the most severe impacts may occur on the environment.

Safety

Telephone numbers of emergency services, including the local fire fighting services, shall be posted conspicuously in the Contractor’s office near the telephone. No firearms are permitted on the construction site, other than those authorised by the Developer for the property Security service provider. Notices should be displayed at all public entrances to the property, warning visitors that they are entering a construction site.

Speed Limit

For security and safety reasons the speed limit on the property for all Contractors’ vehicles is 30 km per hour. The Contractor is responsible for ensuring that all his employees, subcontractors and delivery vehicles adhere to this rule.

Contractors Camp

The Contractors camp will not be situated on this site.

Storage Sheds

Contractors will be permitted to place containers within the boundaries of the Construction area with the specific approval of the Land owner.

Site Structures

All site establishment components (as well as equipment) will be positioned to limit visual intrusion to neighbours and the size of the area to be disturbed. The type and colour of roofing and cladding materials to the Contractor's temporary structures shall be selected to reduce reflection capacity.

Deliveries to Contractors

Contractors will at all times be responsible for compliance by their delivery service providers as engaged. Delivery times will be limited to public times as defined in this document. Contractors have the responsibility of advising the property Security staff of deliveries expected and to be executed. Contractors shall further ensure that drivers of service providers are informed of all procedures and restrictions e.g. which access road to use, speed limits, no-go areas, demarcated construction areas, and maximum allowed vehicle mass etc., as applicable before their first visit to site. Washing of service provider delivery vehicles and equipment will not be allowed on the property and must be carried out elsewhere.

Exotic Plants

A Contractor appointed by the developer and approved by the ECO and Engineer shall be tasked to ensure that all weeds and alien/invasive species are removed. No on-site burying, dumping or stockpiling of any weeds and aliens or invasive species shall occur. They should be removed from the site and dumped at a suitable dumping site from which seed cannot escape.

Water and Soil Management

No activities, including swimming, washing, recreation, ablution, vehicle-washing, etc will be permitted in any of the watercourses or the wetlands. Water is to be protected and conserved at all times. Artificial wetlands and litter traps, which will perform a water purification function, to be constructed to receive all storm water outflows and culverts and care taken to ensure water entering the streams and wetlands is of a satisfactory quality so as not to alter the natural features of the streams and wetlands. The Contractor will be responsible for the earthworks of the artificial wetlands and the Rehabilitation Contractor will be responsible for the re-vegetation and rehabilitation of the artificial wetlands.

Storm Water Management

The following storm water and runoff management measures must be adhered to:

Monitoring design must be set up in accordance with the monitoring program to monitor nutrient and conductivity levels in water quality and also to minimise the rate of application of fertilizers, pesticides, and other chemicals to ensure that it does not exceed the rate of uptake by vegetation and contamination of the soil.

The irrigation layout and design must provide management the opportunity to manage water application process during irrigation by closing certain lines or delivery points to prevent overspray in windy conditions.

Archaeology and Palaeontology Management

Should any heritage or fossil remains be exposed during any excavation or related activities, these must immediately be reported to the Provincial Heritage Resource Authority of the Western Cape, Heritage Western Cape (in terms of the National Heritage Resources Act, 1999 (Act No.25 of 1999)). Heritage remains uncovered or disturbed during earthworks must not be disturbed until inspection and verified by the professional.

Diesel Fuel and Lubricant Handling Program

Any equipment in situ re-fuelling will be from a sturdy 500 litre maximum diesel cart with anti-leak and spill provisions in place. Servicing of construction vehicles and machinery to take place at the Civil Contractors camp. All vehicles must be in a good condition with no leakages leading to possible contamination of soil or water supplies. The following conditions related to the temporary fuel tanks must be implemented:

The fuel tanks must be designed and installed in accordance with relevant Oil Industry standards and SANS codes where applicable for the aboveground storage tanks. The tanks must be located within a bund (110 % of the tanks capacity) in order to contain potential spills.

During fuel tanker delivery, the tanker driver must be present at all times during product offloading. Should an incident occur the supply vehicle emergency cut-off switch must be activated to immediately stop fuel delivery. Flexible hoses with dry-break couplings and emergency isolation must be used. All spillage incidences and actions taken consequent thereto must be reported to the ER and recorded in the site register.

The applicant must ensure that effective stock inventory monitoring; recording and regular auditing take place for the early identification of possible leaks, and keep a leakage loss history for the site. A flow level meter must be installed in the tanks and a summary of the amount of fuel booked out and reconciliation to the flow meter must be provided to the ER to monitor.

The requirements of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), must be adhered to. Crash barriers must be installed around the fuel tanks. An on-site emergency plan must be ready for implementation. The emergency plan must be drafted in consultation with the relevant municipalities Emergency Services to handle on site spillages or fire. Within three months of the tanks ceasing to be used for the purpose for which it is now authorised, the tanks must be removed at the expense of the applicant, and the site, including all associated infrastructure must be rehabilitated to the satisfaction of the relevant authority.

Refuelling:

Refuelling of equipment to be conducted from the bunded fuel tank and pump at the contractors' camp. Fuel tanks must be bunded and supplied with a concrete apron. The concreted refuelling apron will be constructed with a drain along its extremities to collect any diesel contaminated run-off and channel it to the oil trap where separated oil will be collected and disposed of in the oil recycling container and process. Any spills on the concrete apron or floor below the tank are to be treated with OT8 or Spillsolve or equivalent as per the product instructions.

Where tracked or very large equipment is in use well away from the contractor's camp, use may be made of a 500 litre drawn trailer to convey diesel to the equipment for re-fuelling. Such trailer will be drawn by a specified vehicle and driver, with alternate nominated as approved by the Project Engineer. Such tow vehicle may travel at 30kms per hour maximum at any time, be clearly identifiable as such, and may only tow the diesel cart should the pre requisite drip trays and emergency equipment be on the vehicle at the time and as to be further prescribed by Project Engineer. Such in situ re fuelling activity may only take place during a standard specified 2 hour time slot daily as displayed in the ER office, unless specific per day permission has been given to exceed by the ER and pre-recorded in the site record book. Staff will require instruction in the identification of diesel and oil leaks on the concrete apron of the fuel tank area, the operation of the oil trap (including the disposal of trapped oil) and use of Spillsolve (or equivalent) products.

On-Site emergency repairs

Only small mobile plant and emergency repairs are to take place on site. These will require the provision of drip trays and funnels to ensure that no oil or fuel leakages occur onto the ground. Should such spill take place, then the oil saturated soil is to be placed in suitable containers and disposed of at a hazardous waste disposal site. Any contamination of soil is to be treated with Spillsolve or similar product. Contaminated water as a result of an oil or fuel spillage on the area should similarly be treated in appropriate way, and the polluted water should not be specifically removed and not allowed to merge with run-off water collected in the trap collecting all run offs from the slab.

Collection of contaminated spares and waste oils

Contaminated spares, oil filters, gaskets, water, etc will be collected in separate holders at the designated storage facility for disposal at a licensed H:h site.

Staff will require instruction in:

- Deleterious effects of oil / fuel on the environment
- Identification of oil leaks
- Handling of oil / fuel leaks into soil
- Location and method in storage of contaminated spares
- Fire prevention and emergency drills in case of an accident

Services

Care and due cognisance must be taken of existing utilities services, service routes and services restrictions. The Developer and Home Owners shall not be liable for damages, expenses or costs incurred by residents or Contractors for any interruption in supply, variation, frequency, or failure of the utility provider to supply service.

Roads

Only existing access routes to the property will be used during construction work, so as to control the movement of construction vehicles. The contractor shall ensure that access to construction sites and associated infrastructure and equipment, is designated off-limits to the public at all times during construction. Traffic safety measures shall be considered in determining entry or exit points to public roads. Mud and sand deposited onto public roads by construction activities shall be cleared regularly. Appropriate traffic warning signs shall be maintained.

Dust and Noise Control

The Contractor shall ensure that the dust level of 0.02 % of 1 / 50 of the occupational limit shall not be exceeded. The Contractor is to take appropriate measures to minimise the generation of dust as a result of construction works, to the satisfaction of the Land owner. Vegetation must be stripped from demarcated construction sites only shortly before commencing with the construction process. On sandy or very dusty sites, mulched indigenous vegetation, which is to be obtained off the site and is suitable, can be used as a method of stabilisation and dust control. Anchovy net can further be used as a method of stabilising dust control on construction sites or stockpiled sites, especially on sites where no current construction equipment is working. Seed bearing material with invasive vegetation must not be used for stabilization purposes. During high velocity wind conditions, the Contractor or his representative to evaluate the situation and make recommendations as to whether dust suppression measures are adequate, or whether to suspend work until wind speeds drop to an acceptable level.

Appropriate use of Machinery

The Contractor shall at all times carefully consider what machinery is appropriate to the task to minimise the extent of environmental damage. No machinery is to operate outside of any demarcated working area. Operators of machinery must be suitably qualified. All machinery and heavy vehicles to be parked at night only at the defined Contractor's camp.

Anti-erosion measures

The Contractor shall take all appropriate and active measures to prevent erosion, especially wind and water erosion, resulting from operations and activities, specifically inclusive of storm water control measures, to the satisfaction of the ECO/ER. During construction the Contractor shall protect areas susceptible to wind and water erosion, by installing all the necessary temporary and permanent works. Measures can include brush packing, anchovy net stabilisation, etc. Runoff from the

site will be reduced to not exceed pre-development runoff by using detention facilities in critical places. Where required erosion protection measures must be installed. Permanent water bodies must be lined with suitable material to ensure water integrity. Aspects normally covered in construction contracts in terms of protection of works are standard and are not to be confused with those under environmental legislation.

Eating, Washing and Resting Areas

The Contractor must designate restricted places for personnel to eat, wash and rest, within the specified working areas. The Contractor must provide adequate refuse bins with secure, wind and animal proof lids, in all these places. The feeding of, or leaving food for, animals is strictly prohibited. No persons will be permitted to live on site. Only Land owner employed security personnel will be allowed to overnight on site.

The Contractor shall insure that drinking water to SABS standard is available for all staff on site. The Contractor is responsible for the provision of sufficient and suitably placed chemical toilets. Toilets shall be of a neat construction and shall be provided with doors and locks and shall be secure to prevent wind damage. Entrances to toilets must be adequately screened from public view. Sanitation facilities shall be located within 100m from any point of work, but not closer than 50m to any water body. The Contractor shall ensure that toilets are serviced and emptied at least at close of each working week. Waste must be disposed of at a registered waste disposal site. Sanitation provision and servicing shall be to the satisfaction of the Land owner.

Cleaning of vehicles / equipment

Washing of construction vehicles and equipment will only be allowed at the Contractors Camp.

Waste Disposal in terms of Integrated Waste Management

The Contractor will be expected to keep his construction site neat and tidy and free of litter at all times. No on-site burying or dumping of any waste materials, vegetation, litter or refuse shall be allowed. The Contractor shall be responsible for the establishment of a refuse minimisation and control system in line with the IWM Policy of the Development. The Contractor shall ensure that waste and surplus food, food packaging and organic waste are not disposed by any workers anywhere on the site except in the provided removable refuse bins. Refuse bins shall be weather and animal proof with proper securing lids. Bins shall not be allowed to become overfull and shall be emptied on a frequent basis by the Contractor. The Contractor must transport to a suitable waste site refuse collected from the working areas on site at least once a week. Refuse is deemed to include all discarded construction materials such as wire, nails, tins, and cans, drums, piping, plastic straps, bricks, waste cement or concrete, cement bags, etc. Empty paper cement bags are to be similarly disposed if the waste recycling vendor is unable to collect. The Contractor must make adequate provision for the removal of construction rubble and other excess material. No material or construction rubble may be spoiled on the property.

Any solid waste that is not being recycled shall be disposed of at a landfill licensed in terms of section 20 of the Environmental Conservation Act, 1989 (Act No. 73 of 1989).

Construction Material

Construction material will be stored at the Contractors Camp, as well as on the construction site within the demarcated working areas at each construction point. Special permission may be obtained from the ECO/ER to store material on suitable substitute or ancillary locations should the need arise, and as communicated by the Project Engineer. Loads including, but not limited to sand, shell-grit, stone chip, fine vegetation and refuse, shall have appropriate cover to prevent them spilling from the vehicles during transport. All construction materials are to be prepared at the Contractors camp or within the demarcated working area at each construction point. No construction material may be sourced from the property via quarrying or sand mining. Subsoil, calcrete and clay that become available on site during the construction may however be used as construction material on the property. Any imported material (e.g. sand, shell-grit, etc) should be free of plant seeds and be sourced from a registered mining area and declared to the ECO so that the source could be determined, inspected and approved. No paint products or containers may be disposed of on site. Oil based paints, chemicals additives and cleaners such as thinners and turpentine shall be strictly controlled and correctly disposed of.

Rehabilitation and Site Clean Up

Stabilisation and rehabilitation must take place immediately after construction operations have been completed. No construction equipment, vehicles or unauthorised personnel shall be allowed onto areas that have been re-vegetated.

The Contractors must ensure that all temporary 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 sites shall be cleared, and cleaned to the satisfaction of the Developer.

Blasting - use of explosives

Wherever blasting activities are required on the site the contractor shall rigorously adhere to the relevant statutes and regulations that control the use of explosives (e.g. Explosives Act No. 15 of 2003). In addition, the Contractor shall, prior to any drilling of holes in preparation for blasting, supply the Engineer with a locality plan of the blast site on which shall be shown the zones of influence of any ground and air shock-waves and expected limits of fly-rock.

The plan shall show each dwelling, structure and service within the zones of influence and record all details of the dwellings/ structures/ services including existing positions, lengths and widths of cracks, as well as the condition of doors, windows, roofing, wells, boreholes, etc. The Contractor, alone, shall be responsible for any costs that can be attributed to blasting activities, including the collection of fly-rock from adjacent areas, The submission of such a plan shall not in any way absolve the Contractor from his responsibilities in this regard. The Contractor shall

also indicate to the Engineer the manner in which he intends to advertise to the adjacent communities and road users the time and delays to be expected for each individual blast occurrence.

The plan further shall show how the Contractor will handle and dispose of all excess explosive material. No burning or burying of excess explosives will be allowed on site and these explosives shall be disposed of in the prescribed manner and at a suitably licensed facility.

Construction Personnel Safety

All personnel must wear Personal Protective Equipment during the construction of the proposed development.

Checklists

The attached checklists are tools, which will aid the ECO/ER in the implementation and enforcement of the EMP, EA and/or WL during construction.

Four templates for different types of checklists have been attached, namely:

- Start-up Checklist
- Weekly Checklist
- Monthly Checklist
- Site Closure Checklist

It is imperative that the ECO/ER undertakes to complete the checklists on a weekly and monthly basis in order to ensure that the EMP, EA and/or WL are effectively implemented.

This annexure also contains a pro forma monthly compliance certificate to be completed by the contractor and kept as a record of compliance and non-compliance by the ER as part of the formal record of the contract. The relevant weekly and monthly checklists should be attached to this Certificate as supporting documentation. The Responsible DEA:DP Environmental Official may request these certificates at any stage during the contract.

Note that each checklist must be adapted before construction to ensure that project specific EA conditions are included in checklist, which must be audited for compliance.

PROJECT START-UP CHECKLIST: Contract:

ENVIRONMENTAL ASPECT	YES/NO (√ or X)	COMMENTS
• Environmental method statements submitted/ approved pre-construction		
• Copy of full Contract Document on Site.		
• Environmental Awareness education course completed: Site/ attendance register lodged with ECO / ER.		
• Telephone numbers of emergency services are available/posted on Site.		
• List of hazardous materials on Site with storage, handling and disposal procedures, and relevant MSDS sheets.		
• Location/ type of boundary fencing as erected -- complies with the specification		
• Solid waste management system has been established.		
• Wastewater management system has been established.		
• Location of construction camp and working area infrastructure comply with specifications.		
• All necessary fire-fighting equipment is on Site and in good working order.		

Completed by: Sign: Date:

WEEKLY CHECKLIST: Contract:

ENVIRONMENTAL ASPECT	YES/NO (√ or X)	COMMENTS
• Contractor's camp is neat and tidy and the labourers' facilities are of an acceptable standard.		
• Waste control and removal system is being maintained.		
• Sufficient fire-fighting equipment is available on Site and is in good working order.		
• Wastewater control system is being maintained.		
• Boundary and other fences are being maintained.		
• Bunds/ drip trays are being emptied on a regular basis especially after rain).		
• All construction vehicles are in good working order and no leakages are visible.		
• Refuelling of vehicles is in accordance with the EMP and EA specifications.		
• No go areas, remaining natural features, infrastructure and trees have not been damaged.		
• Dust control measures (if necessary) are in place and are effectively controlling dust.		
• Noise Control measures (if necessary) are in place and are working effectively.		
• Erosion control measures (if necessary) are in place and are effective in controlling erosion.		
• Stockpiles of topsoil are located within the boundary of the site and do not exceed 2 m in height.		
• Any spot fines, penalties recorded in the Site Diary		

Completed by:Sign:.....Date:

MONTHLY CHECKLIST: Contract:

ENVIRONMENTAL ASPECT	YES/NO (√ OR X)	COMMENTS
• The EMP is an item on the Monthly Site Meeting Agenda		
• The Contractor has made staff numbers report available		
• All new personnel on site are aware of the contents of the EMP and EA and have been through the environmental awareness course.		
• Construction activities are being undertaken according to approved method statements		
• Fuel and flammable material storage areas comply with general fire safety requirements.		
• Public complaints have been recorded and dealt with in a satisfactory manner.		
• Monthly Compliance Certificate has been completed.		

Completed by: Sign: Date:.....

SITE CLOSURE CHECKLIST: Contract:

ENVIRONMENTAL ASPECT	YES / NO (√ OR X)	COMMENTS
<ul style="list-style-type: none"> Contractor has cleared everything not forming part of the permanent works 		
<ul style="list-style-type: none"> Environmental Snag List has been compiled 		
<ul style="list-style-type: none"> Re-vegetation and rehabilitation has been satisfactorily completed and in accordance with the Re-vegetation and Rehabilitation Specification 		
<ul style="list-style-type: none"> All areas disturbed by the Contractor have been rehabilitated in accordance with the Re-vegetation Specification 		
<ul style="list-style-type: none"> Outstanding fines have been deducted from the Final Payment Certificate 		

Completed by:.....Sign:Date:

MONTHLY COMPLIANCE CERTIFICATE

FOR PERIOD..... TO.....

<p>CONTRACT: Contract:</p> <p>ENGINEER'S REPRESENTATIVE:</p> <p>SIGN:</p>

Date of Submission: _____

Key activities on site during the month: _____

NON-CONFORMANCE

Area of activity: _____

Reason: _____

Responsible Party: _____

Corrective action taken:

Intended follow-up:

GOOD PERFORMANCE

Description of activity or action in which contract went beyond compliance towards responsible care for the environment:

INTERACTION WITH THE PUBLIC AND ADDITIONAL COMMENTS

*Supporting photographs to be attached if appropriate

Operational Phase

Introduction

The management program is the procedure to achieve its environmental policy and goals.

The management program has been structured in table format in order to show the links between the over-arching goals and their associated objectives, actions, monitoring requirements and targets.

This programme consists of the following components:

Goals

Over-arching environmental goals for the management phase.

Objectives

The objectives are in place in order to meet these goals. These take into account the findings from existing studies and monitoring programmes.

Management Actions

The actions needed to achieve the objectives, taking into consideration factors such as responsibility, methods, frequency, resources required and prioritisation.

Monitoring

Key actions to verify that objectives are being achieved, taking into consideration responsibility, frequency, methods, and reporting.

Criteria/ Targets

The criteria or targets indicate the efficacy of the management programme. The targets should be readily measurable, understandable to the layperson, cost-effective to monitor, and meet legal requirements.

Remedial Actions

Specifies actions needed to be taken if the targets are not met; or if there is an unforeseen event.

Goals

The following are specified goals:

Goal 1: Waste Management

Goal 2: Pollution Control

Goal 3: Erosion Control

Goal 4: Safety, Security and Emergency Procedures (including fences)

Goal 5: On-going Monitoring of social environmental impacts

Goal 6: Archaeological/Paleontological Management

Goal 7: Water and Electricity Demand Management

Primary Management Objectives

The primary management objectives of Property Development are:

- To set guidelines in a management plan for correct management procedures and methods, in such a manner that they may be flexible in as much as situations change, and as new technology and methods become available. For this reason, the Environmental Management Programme is to be updated on a 5 year (See figure 1) cycle to provide guidance to managers, which is especially important also for continuity during any changes in management. This EMP will facilitate the manager's annual planning in terms of allocating staff, time and financial resources towards management goals and responsibilities, which can then be subject to audit by an independent office.
- To maintain a finite standard and quality finishing and of service delivery on the property to prevent degradation. This requires on-going maintenance of buildings, gardens and infrastructure and the repair of environmental damage caused by users e.g. erosion or trampling of vegetation.

Management Programme

This following section defines the management programme for each of the 10 identified goals during the operational phase. The programme is presented in the form of a table, which includes the components described.

Additional information, where necessary, is contained following the tables.

Goal 1: Waste Management

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
<p><i>Ensure allocation of sufficient resources for on-going Integrated Waste Management e.g. staff, equipment.</i></p>	<p>Pollution and odours</p>	<ol style="list-style-type: none"> 1. No solid waste may be incinerated on the property. 2. All vehicles transporting waste must be closed to avoid possible pollution of waste on transport routes. 3. Waste needs to be sorted and recycled where necessary. 4. Domestic waste not suitable for compost or bio electricity generation needs to be stored in skips for transport to the Local Authorities registered Landfill site. 	<p>Yearly audits of operations vs EMP to identify those requirements that are not being met.</p> <p>Responsibility: ECO</p>	<ol style="list-style-type: none"> 1. Adequate annual Budgets. 2. On-going employment of ECO and in house maintenance staff 	<p>To be determined when required</p>

Waste Management

Waste is defined as any matter for which the current user has no further purpose, or any matter, gaseous, liquid, or solid or any combination thereof originating from any residential, commercial or industrial use, which has been discarded, accumulated, or stored.

It further is worth noting that on average 80% of waste management costs accrue to transport.

Principally three types of waste occur.

- | | |
|-----------------------------------|---|
| - Gaseous | Open fires |
| - High moisture (effluent) | sewerage/waste water/ petroleum products |
| - Low moisture (solid/semi solid) | glass/plastic/ cardboard/ paper/ domestic/ chemical |

Some potential consequences:

- Salination of ground/surface/ river water.
- Eutrication (nutrient enrichment) of natural areas.
- Microbiological contamination of natural areas.
- Sediment & silt migration inflows.
- Harmful inorganic/organic compounds introduction into soil.

Chemical residues and empty containers are required as per purchase contract to be removed ex site by the original supplier. The supplier is asked to further declare that such waste is disposed of within accepted Waste Management Programs standards.

Identified Waste Streams

Components

Sewerage (black water)
Sewerage (grey water)
Wet refuse
Dry refuse
Bottles & glass
Tins/cans
Plastic/polypropylene
Garden refuse
General other waste

Waste Management Strategy

Waste Avoidance

Objective is to promote the concept of minimisation in the generation of any waste in all activities and sites.

Waste Reduction

To promote the reduction of all waste by ensuring that nothing that can be decomposed is disposed of to waste as opposed to recycling.

Waste Disposal

To store, dispose or treat all waste that cannot be avoided, recycled, or composted at licensed facilities within regular operational and environmental monitoring and always in accordance with regulatory requirements.

Goal 2: Pollution Control

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
<p><i>Ensure allocation of sufficient resources for on-going Integrated Waste and pollution control Management e.g. staff, equipment, budget.</i></p>	<p>Pollution and odours</p>	<ol style="list-style-type: none"> 1. Waste to be stored on the property in an appropriate container or facility 2. All vehicles transporting waste must be closed to avoid pollution of transport routes. 	<p>Yearly audits of operations vs EMP and identification of those requirements that are not met. Responsibility: ECO</p>	<ol style="list-style-type: none"> 1. Adequate annual Budgets. 2. On-going employment of ECO and in house maintenance staff 	<p>To be determined</p>

Goal 3: Erosion Control

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
<i>Ensure allocation of sufficient resources) for on-going erosion control management (e.g. staff, equipment, budget</i>	Erosion, sink-holes and or blocking of storm water systems. Damage to Infrastructure.	<ol style="list-style-type: none"> 1. On-going control and management of roads, roadways and areas susceptible to erosion. 2. Ensure suitable vegetation cover or surface on non-hardened surfaces. 3. Control runoff of storm water to prevent soil erosion. 	Yearly audits of operations vs EMP and identification of those requirements that are not met. Responsibility: ECO	<ol style="list-style-type: none"> 1. Adequate annual Budgets approved. 2. On-going employment of ECO and maintenance staff 	To be determined

Erosion Control

Erosion to be substantially under control and water erosion remedies fully developed and managed in accordance to the storm water management plan for the property. Erosion control and maintenance will be an on-going process, especially erosion developing on or as a result of roads. The commitment remains to keep to the existing standards as evident.

Goal 4: Safety and Security Measures and Emergency Procedures

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
<p><i>Ensure allocation of sufficient resources for on-going safety, security and emergency procedures. e.g. staff, equipment, budget</i></p>	<p>Pollution, fire and health risks.</p>	<ol style="list-style-type: none"> 1. Security access control to be in place. 2. Security access control to action fire drill protocols as/ if needed 3. All supply vehicles to site to comply with SANS 1518:2005 standards. 4. All dangerous goods as classified under SANS 10228:2006 to be identified upon receipt and stored to the required standards. 5. Emergency shutdown activation plan to direct actions in the event of major catastrophe. 	<p>Yearly audits of operations vs EMP and identification of those requirements that are not met. Responsibility: ECO</p>	<ol style="list-style-type: none"> 1. Adequate annual Budgets approved. 2. On-going employment of ECO and maintenance staff 	<p>To be determined</p>

Goal 5: On-going Monitoring of Social Environmental Impacts

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
<p><i>Ensure allocation of sufficient resources for on-going monitoring of environmental impacts.</i> <i>e.g. staff, equipment, budget</i></p>	<p>Pollution, nuisances and health risks.</p>	<ol style="list-style-type: none"> 1. Internal formal management inspections on a weekly and monthly basis. 2. Annual report back to community forum on results and outcomes of the monitoring and audit. 	<p>Yearly audits of operations vs EMP and identification of those requirements that are not met.</p> <p>Responsibility: ECO</p>	<ol style="list-style-type: none"> 1. Adequate annual Budgets approved. 2. On-going employment of ECO and maintenance staff 	<p>To be determined</p>

Goal 6: Archaeological/ Paleontological Impacts

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
<p><i>Ensure allocation of sufficient resources for on-going archaeological management</i></p>	<p>Theft, damage and degradation of archaeological finds and sites on the property.</p>	<p>1. Should any human remains be found, exposed or uncovered during excavations and earthworks, these should immediately be reported to the South African Heritage Resources Agency or Heritage Western Cape. Burial remains should not be disturbed or removed until inspected by the archaeologist.</p>	<p>Yearly audits of operations vs EMP and identification of those requirements that are not met. Responsibility: ECO</p>	<p>1. Adequate annual Budgets 2. On-going employment of ECO and internal maintenance staff. 3. Trained guides</p>	<p>To be determined</p>

Goal 7: Water and Electricity Demand Management

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
<p><i>Ensure allocation of sufficient resources e.g. staff, equipment, Budgets, for on-going water, energy and resource demand management and efficiency.</i></p>	<p>Excessive utilization of natural resources.</p>	<ol style="list-style-type: none"> 1. Toilets must have interruptible flush mechanism to control over flushing by the user or the cistern to be supplied with a fitted weight to interrupt the flow or a hippo pack or any water replacement device to reduce the water used in a single flush. 2. All toilet cisterns to have a capacity of less than 9 litres. 3. No automatic flush urinals to be installed in any facility. 4. Energy saving light bulbs (CFLs / LEDs) to be installed instead of incandescent bulbs 	<p>Yearly audits of Operations vs EMP and identification of those requirements that are not met. Responsibility: ECO</p>	<ol style="list-style-type: none"> 1. Adequate annual Budgets 2. On-going employment of ECO and maintenance staff 	<p>To be determined</p>

Decommissioning Phase EMP

As the final phase in the project cycle, decommissioning may present positive environmental opportunities associated with the return of the land for alternative use and the cessation of impacts associated with operational activities. However, depending on the nature of the operational activity, the need to manage risks and potential residual impacts may remain well after operations have ceased.

Examples of potential residual impacts and risks include contamination of soil and groundwater, stock that has been abandoned (e.g. oil drums, scrap equipment, old chemicals) and old (unserviceable) structures. The decommissioning phase EMP provides specific guidance with respect to the management of the environmental risks associated with the decommissioning stage of a project. The decommissioning phase EMPs are typically encountered within extractive industries such as minerals mining and oil and gas exploration and extraction.

Closure and decommissioning impacts are likely to be similar to the construction phase impacts. The management actions and control under the Construction Phase EMP need to be implemented to mitigate the negative impacts on the environment and to restore the property to its natural state. It is highly unlikely that the development will be decommissioned and closed in the foreseeable future.

A decommissioning phase is where a structure is removed or otherwise modified to make it incapable for re use for the original design purpose. Bear in mind that this is a housing development. Houses will always be required and the natural veld not developed will remain Private Open Space, which makes the impact decommissioning most improbable.

The results of environmental monitoring during the decommissioning phase will be used to assess the impact of the decommissioning on the surrounding environment and demonstrate compliance with regulatory requirements.

The actual scope of the decommissioning environmental monitoring will be established following consultation with the regulatory authorities. The format of decommission management strategy will probably be similar to that of earlier development phases and consist of the following:

- Management Principles
 - Develop monitoring procedures in accordance with standard protocols and the requirements of the Environmental legislation.
 - Undertake environmental monitoring during the decommission phase as shown below.
 - Calibrate and maintain all equipment used for environmental monitoring.
 - Maintain records of the calibration and maintenance for each piece of monitoring equipment held on site.
 - Send all samples to a SABS registered laboratory for analysis.

Environmental monitoring during the decommission phase will include:

- Groundwater Quality and Quantity
- Surface Water Surface Water Quality
- Terrestrial Flora Rehabilitation monitoring

CHAPTER 8

This section of the report is included in compliance with Section 24 N 3 (c) of the National Environmental Management Amendment Act 62 of 2008.

WHAT IS THE ENVIRONMENT?

- **Soil**
- **Water**
- **Plants**
- **People**
- **Animals**
- **Air we breathe**

and houses



• Buildings, cars t

WHY MUST WE LOOK AFTER THE ENVIRONMENT?

- It affects us all as well as future generations
 - We have a right to a healthy environment
 - A Policy and System will be signed
-

HOW DO WE LOOK AFTER THE ENVIRONMENT?

- Report problems to your supervisor/ foreman
- Team work
- Follow the rules in the EMP



WORKING AREAS

Workers & equipment must stay inside the site boundaries at all times



RIVERS & STREAMS

- Do not swim in or drink from streams
 - Do not throw oil, petrol, diesel, concrete or rubbish in the stream
 - Do not work in the stream without direct instruction
 - Do not damage the banks or vegetation of the stream
-



ANIMALS

- Do not injure or kill any animals on the site
 - Ask your supervisor or Contract's Manager to remove animals found on site
-



TREES AND FLOWERS

- Do not damage or cut down any trees or plants without permission
- Do not pick flowers



SMOKING AND FIRE

- Put cigarette butts in a rubbish bin
- Do not smoke near gas, paints or petrol
- Do not light any fires without permission
- Know the positions of fire fighting equipment
- Report all fires
- Do not burn rubbish or vegetation without permission



PETROL, OIL AND DIESEL

- Work with petrol, oil & diesel in marked areas
- Report any petrol, oil & diesel leaks or spills to your supervisor
- Use a drip tray under vehicles & machinery
- Empty drip trays after rain & throw away where instructed



DUST

Try to avoid producing dust



NOISE

- Do not make loud noises around the site, especially near schools and homes
- Report or repair noisy vehicles



TOILETS

- Use the toilets provided
- Report full or leaking toilets



EATING

- Only eat in demarcated eating areas
- Never eat near a river or stream
- Put packaging & leftover food into rubbish bins



RUBBISH

- Do not litter – put all rubbish (especially cement bags) into the bins provided
- Report full bins to your supervisor
- The responsible person should empty bins regularly



TRUCKS AND DRIVING

- Always keep to the speed limit
- Drivers – check & report leaks and vehicles that belch smoke
- Ensure loads are secure & do not spill



EMERGENCY PHONE NUMBERS

Know all the emergency phone numbers:

- Ambulance:
- Fire:
- Police: 10111



FINES AND PENALTIES

- Spot fines of between R20 and R2000
- Your company may be fined
- Removal from site
- Construction may be stopped



PROBLEMS - WHAT TO DO!

- Report any breaks, floods, fires, leaks and injuries to your supervisor
- Ask questions!



Updating/adapting of the EMP

Although care has been taken to address all known relevant environmental issues for the development, it will become necessary to add or amend certain procedures or instructions to improve the efficiency of the EMP. Only those additions to, or amendments of, this EMP that will either improve environmental protection or can be proven not to have any negative effects would be considered by the Developer.

REFERENCES

City of Cape Town (2002) Environmental Management Programme (Version 5) for Civil Engineering Construction Activities.

DEA&DP: ENVIRONMENTAL MANAGEMENT PROGRAMME. VER 5 (04/2002).
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Department of Water Affairs and Forestry, February 2005. Environmental Best Practice Specifications: Construction Integrated Environmental Management Sub-Series No. IEMS 1.6. Third Edition. Pretoria.