

**MONTAGU CO-OPERATIVE WINE CELLAR LTD  
Waste Water Treatment Works**

**1<sup>st</sup> Draft Environmental Management Programme**

**DEA&DP REFERENCE NUMBER: 19/2/5/1/B1/11/WL0116/12**

**March 2013**

**Applicant: MONTAGU CO-OPERATIVE WINE CELLAR LTD**

**Compiled by:**  
Johmandie Giliomee

**Eco Impact Legal Consulting (Pty) Ltd**

P.O. Box 45070  
Claremont  
South Africa  
7735

Tel: 021 671 1660;

Fax: 088 021 671 1660

Email: [admin@ecoimpact.co.za](mailto:admin@ecoimpact.co.za)



 <p>Environmental Health &amp; Safety Legal Consulting</p>		<b>Title:</b> Montagu Cellar Waste Water Treatment Works		
<b>Eco Impact No:</b> 1-3/2013		<b>Date:</b> 28 March 2013		<b>Report Status:</b> 1 <sup>st</sup> Draft
<b>Carried Out By:</b> Eco Impact Legal Consulting (Pty) Ltd P.O. Box 45070 Claremont 7735 Tel: 021 671 1660; Fax: 088 021 67 11660 E-mail: admin@ecoimpact.co.za		<b>Commissioned By:</b> Mr Eben Rademeyer P.O. Box 29 Montagu 6720 Tel: 023 614 1125 Fax: 023 614 1793 E-mail: manager@montaguwines.co.za		<b>Client:</b> Montagu Co-operative Wine Cellar Ltd P.O. Box 29 Montagu 6720 Tel: 023 614 1125 Fax: 023 614 1793 E-mail: manager@montaguwines.co.za
<b>Author:</b> Johmandie Giliomee		<b>Client Contact Person:</b> Eben Rademeyer (see contact details above)		
© COPYRIGHT: Eco Impact Legal Consulting (Pty) Ltd				
Verification	Capacity	Name	Signature	Date
By Author	Senior EAP & Biodiversity Specialist	Johmandie Giliomee		28 March 2013
Reviewed	Director: Environmental Management; Principle EAP & Biodiversity Specialist	Nicolaas Hanekom		28 March 2013

**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 of .....20..

.....  
**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 of .....20..

.....  
**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
DEAT:	Department of Environmental Affairs and Tourism
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
WL:	Waste License

## **COMMITMENT**

The Montagu Cellar has committed itself to a set of values, which include the maintenance of good relations and transparent communications with all stakeholders and the dynamic engagement of the larger community on whose behalf the ownership is the custodian of both the natural and associated cultural heritage of the area.

Montagu Cellar undertakes to implement a suitable management system for all the areas and aspects of its operation. This will ensure that development and management of projects will comply with legal, technical, environmental and transformation policies and standards.

Montagu Cellar, in formulating this Environmental Management Programme (EMP) for implementation intends to enable continual improvement in the management of the area. The EMP will guide the strategic environmental management and annual planning as well as operational management planning. It comprises mechanisms and procedures to ensure an on-going review of all area and aspect management activities.

The EMP system enables the achievement of strategic objectives on the property and ensures that the basic requirements of ISO 14001: 2004, ISO 9001:2000, ISO 19011:2002 and ISO 18001:2008 can be met. The trend in industry is to satisfy a more integrated set of objectives through the implementation of such a system. It must change the way in which the ownership and operators plan for, and manages resources to achieve sustainability.

The implementation of the system on site will require the full support and commitment of owners, management and personnel. 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.

It is essential from the outset that the system meets the operational requirements of an environmentally friendly and sustainable area management system and for stakeholders to view the system as facilitating good management and compliance rather than as a system that exerts control only from the corporate level.

*The holder and any person issued with an environmental authorisation:*

- (a) Must at all times give effect to the general objectives of integrated environmental management laid down in section 23;*
- (b) Must consider, investigate, assess and communicate the impact of his or her prospecting or mining on the environment;*
- (c) Must manage all environmental impacts:
  - (i) in accordance with his or her approved environmental management programme, where appropriate; and*
  - (ii) as an integral part of the reconnaissance, prospecting or mining, exploration or production operation, unless the Minister of Minerals and Energy directs otherwise;**
- (d) Must monitor and audit compliance with the requirements of the environmental management programme;*
- (e) Must, as far as is reasonably practicable, rehabilitate the environment affected by the prospecting or mining operations to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and*
- (f) Is responsible for any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of his or her prospecting or mining operations or related mining activities which may occur inside and outside the boundaries of the prospecting or mining area to which such right or permit relates.*

## **EXECUTIVE SUMMARY**

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

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

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 PROGRAMS (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.

In 2010, the NEMA: Environmental Impact Assessment Regulations were published because of interpretation problems with the old regulations and also because of the changing legal regime relating to mining and the environment. New laws under the NEMA suite such as the Waste Act and the Coastal Management Act needed to be included in the EIA process. Mainly changes were made to the procedural requirements of the EIA process, some listed activities were removed completely, other listed activity threshold levels changed and a new listing 3 was created to deal with activities in protected and sensitive geographical areas. New definitions attempt to clarify previous uncertainties and the concept of upgrades and expansion of activities are changed and are now based on the extent or threshold of the upgrade or expansion. Concerning the Environmental Management Plan EMP now stands for Environmental Management Programme not Environmental Management Plan. The EMP now also takes the place of the EMP that was previously obtained under the MPRDA. The EMP must contain compliance and performance assessment and rehabilitation measures. Also measures to manage compliance with prescribed environmental management standards or practices and any NEMA provision relating to closure and financing for rehabilitation or closure. Also if relevant it must contain any measures for the pumping or treatment of extraneous water or managing any ecological degradation as a result of undertaking a listed activity. The EMP must contain an environmental awareness plan detailing how employees are to be informed of the environmental risk of their work and how to avoid pollution or degradation.

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.

### **Who Enforces the EMP?**

An Environmental Control Officer (“ECO”) should oversee the implementation of the EMP on site.

### **Competency of the Environmental Control Officer (ECO) Required**

The ECO should:

- be able to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental aspects;
- have good working knowledge of all relevant environmental policies, legislation, guidelines and standards;
- have the ability to conduct inspections and audits and to produce thorough, readable and informative reports;
- have the ability to manage public communication and complaints;
- have the ability to think holistically about the structure, functioning and performance of environmental systems; and
- have proven competence in the application of the following integrated environmental management tools:
  - Environmental Impact Assessment
  - Environmental management plans/programmes
  - Environmental auditing
  - Mitigation and optimisation of impacts
  - Monitoring and evaluation of impacts
  - Environmental Management Systems

### **Method Statements**

For each site, certain activities require method statements that have to be approved by the ECO and landowner prior to that activity commencing on site.

For example, an explanation of the solid waste management system on site would be required; including details of how often waste will be removed from site, where waste will be stored, how it will be stored, etc.

Method statements are fully defined in the Provincial Guideline document. A *pro forma* method statement format is appended and included and must be completed by all contractors operating on site. Such method statements are to be formally approved by the landowner and the ECO.



The purpose of method statements is to give the landowner and ECO enough information to determine if both the Contractor and his management actions in undertaking the activity, will respect the environment.

As example, will the solid waste removal system prevent cement bags and other rubbish from flying around the site?

### **Fines**

Failure to adhere fully to the specifications of the EMP may result in spot fines being issued to workers *and* contractors by the ECO. These fines are to be deducted from the monthly payment certificates. Thereafter, it is the responsibility of management to collect the fines from the guilty individuals or owners.

If the EMP is still not being fully adhered to, guilty individuals may be suspended 'off site' and the Environmental Permitting Authority may issue a 'stop work order' to the operation.

### **Involvement as Part of a Team**

The keywords and actions that will determine the success of the EMP and the project are *Team Effort*. The old saying, "a chain is as strong as the weakest link" holds true to the process. Only through co-operative management and empowerment via awareness education can we maintain and improve our environment. Every effort must be made to assist with this prescribed development requirement.

For the EMP to be successful, its contents must be communicated to everyone on site. For management and foremen this document serves as an introduction to being acquainted with the EMP. For the general labour force, this involves a short environmental education course that must be given to all labour before or soon after setting up on site.

The purpose of the Environmental Management Programme (EMP) is to ensure a harmonious integration of all operations and management activities within the development with minimal impact upon either the environment or man. In order to maintain aesthetics, standards, general appearance, and security arrangements, it is necessary that Contractor's, sub-Contractors and management and staff adhere to rules and regulations as determined herewith inter alia by the landowner, based upon applicable legislation in South Africa from time to time.

Strict adherence to all aspects of these rules is required and expected at all times and in all respects. The Contractors and staff acknowledge that they are working on an environmentally sensitive project and agree to conform to all environmental controls specified.

### **Approach to the EMP**

From the outset, the approach adopted for the EMP for the development has been based on the internationally recognised ISO 14001 standard for environmental management systems. This standard places strong emphasis on the need for continuous improvement of the system and resultant environmental management performance. This can be achieved through reviewing the EMP, based on monitoring and auditing results, and through regular refinement of the operating instructions and protocols used by personnel on site.

The implementation of this EMP is one of several steps taken by Prince Albert Municipality in pursuit of continuous improvement.

This EMP includes environmental goals, objectives, management actions, monitoring requirements, targets/criteria for monitoring, and remedial actions.

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

Key aspects that are addressed are:

- Waste Management and Pollution Control
- Water Quality and Storm Water Management
- Fire Management
- Erosion Control
- Safety and Security Measures and Emergency Procedures
- Vegetation Management, Inclusive of Alien Plant Control
- On-going Monitoring of Social Environmental Impacts
- Heritage Management
- Discharge Management
- Odour Management
- Waste Water Treatment Works Management

## **CHAPTER 1**

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 and Background**

Montagu Wine Cellar proposes to upgrade and expand their existing cellar waste water treatment works to establish a waste water treatment works at the wine cellar premises to treat cellar wash water to DWA irrigation standards.

The winery effluent comprises only cellar wash water (excluding sewage and condensate). The system design is based on standard aerobic biological treatment in pre-fabricated steel tanks with internal HDPE liners and comprises the following operational units:

#### **1. Screening (existing infrastructure which will be expanded)**

Mechanical screens remove the pips and skins from the cellar wash water (these screened solids will be removed and mixed with bulk grape solids for composting).

#### **2. Lime dosing (existing infrastructure which will be expanded)**

Lime is mixed in a concentrate/tank and then continuously dosed into the winery effluent stream; the purpose is to neutralise the effluent prior to biological treatment.

#### **3. Settling (existing infrastructure)**

The delta-separator allows for removal of settle-able material, consisting mainly of insoluble lime and filter aid material (these settled solids will be removed and mixed with bulk grape solids for composting).

#### **4. Bioreactor (New infrastructure to allow for the expansion of the existing waste water treatment system)**

These will be pre-fabricated steel tanks (two tanks) of 360 m<sup>3</sup> with internal HDPE liner and fitted with mechanical aeration to provide sufficient dissolved oxygen for biological COD degradation. The hydraulic retention will be 3 days in this unit,

**5. Clarifier (New infrastructure to allow for the expansion of the existing waste water treatment system)**

A smaller steel tank of approximately 210 m<sup>3</sup> providing 2 hours for settling of the microbial biomass that developed in the previous bioreactor. The biomass will be partially returned to the bioreactor and partially removed for co-composting with the bulk grape solids waste.

**6. Final treated waste water disposal (New infrastructure to allow for the expansion of the existing waste water treatment system)**

The overflow from the clarifier tank will be compliant with DWA irrigation standard (i.e. COD < 400 mg/L) and will be pumped towards the nearby golf course for irrigation use.



 Existing and proposed Montagu Cellar WWTW area.





— Proposed pipeline from Montagu Cellar WWTW to Golf Course (to connect to current water supply system from Cogmanskloof Irrigation Board).

## **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 EMP Availability on Site**

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 and relevant environmental departments (DEA and DEADP) 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**

### **Issues Relating to the Implementation of the EMP**

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.

### **2.1 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 landowner, 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.

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.

## **2.2 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;
- conduct the initial environmental awareness training for construction employees before construction commences onsite;
- 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.

## **2.3 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.

After initial before construction start-up site visit it is recommended that an ECO site visit be conducted every two months.

Information recording activity on site, and any guidelines or instructions emanating there from will be routinely made available electronically to the Developer and applicable Contractor's and a copy of the report must be available at the site office. 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 at annual intervals.

## **2.4 Engineer Representative/Site Manager**

The engineer representative/site manager ("ER") will have the following environmental control responsibilities:

- In conjunction with the ECO will present the environmental education programmes to all persons employed on site.
- Consult with the ECO, landowner 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 recommendations must be considered when deciding whether or not to impose a penalty.
- The ER will, via the ECO actions, be accountable for the overall implementation of the Environmental Management Programme and EA guidelines.
- 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.

## **2.5 Contractors**

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

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 ER.
- 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 ER's / 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 ER.

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

The ER 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 ER in a site diary, registers, issues/ warning book, etc. In addition, the ER is to undertake weekly and monthly checks on Site in order to ensure compliance with the EMP and EA.

## **2.7 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.

## **2.8 Compliance with other legislation**

It is important that staff is aware of other legislation that may relate to the activities taking place on Sit.

## **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  
 HEALTH ACT 1977 (Act 63 of 1977)  
 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.

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

Example of Environmental Method Statement Form:

**METHOD STATEMENT**

**CONTRACT:**..... **DATE:**.....

**PROPOSED ACTIVITY** (give title of method statement and reference number from the EMP):

**WHAT WORK IS TO BE UNDERTAKEN** (give a brief description of the works):

**WHERE ARE THE WORKS TO BE UNDERTAKEN** (where possible, provide an annotated plan and a full description of the extent of the works):

**START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:**

Start Date:

End Date:

**HOW ARE THE WORKS TO BE UNDERTAKEN** (provide as much detail as possible, including annotated maps and plans where possible):

Note: please attach extra pages if more space is required

**DECLARATIONS**

**1) ENVIRONMENTAL SITE OFFICER/ ENGINEERS REPRESENTATIVE [select correct term]**

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

\_\_\_\_\_  
(signed)

\_\_\_\_\_  
(print name)

Dated: \_\_\_\_\_

**2) PERSON UNDERTAKING THE WORKS**

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to other signatories and that the ESO and ER will audit my compliance with the contents of this Method Statement

\_\_\_\_\_  
(signed)

\_\_\_\_\_  
(print name)

Dated: \_\_\_\_\_

**3) APPROVING AUTHORITY (Engineer)**

The works described in this Method Statement are approved.

\_\_\_\_\_  
(signed)

\_\_\_\_\_  
(print name)

\_\_\_\_\_  
(designation)

Dated: \_\_\_\_\_

## **CHAPTER 4**

### **Compliance**

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.

#### **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 3 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 auditing is performed at designated intervals.

These audit 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 for such information.

- 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 or as required in the Waste License. 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 information.

#### 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 <sup>2</sup>
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 <sup>2</sup>
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, any costs incurred by the client in consequence 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**

### **Registers**

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.

### **5.1 Reporting and Record-Keeping**

#### **5.1.1 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.

#### **5.1.2 Reports**

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 and/or WL;
- All Method Statements for all phases of the project.

### **5.1.3 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.

### **5.1.4 Reporting Requirements**

The ECO shall be responsible for monitoring compliance with the EMP and WL. 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, EA and WL;
- 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, EA and WL specifications in the Contract Document to ensure that the requirements of the EMP, EA and WL are met.

## **CHAPTER 6**

### **Public Communication Protocols**

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.

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 ensuring maintenance of the Compliance Register to record complaints received and action taken.

## **CHAPTER 7**

### **Environmental Management Programme**

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.

#### **Construction Phase**

### **CONSTRUCTION ENVIRONMENTAL MANAGEMENT PROGRAMME**

#### **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.

#### **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 before Construction Activities Commences**

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 has the right to request further additions, should it become necessary.

MS must indicate the following where applicable:

- 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 the intended activity i.e. combating pollution especially oils
- (4) Supervision levels to be accorded such responsibilities.

### Working Hours

Public vs. Private time

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

	<b>Civil Sites</b>	<b>Construction</b>	<b>Residential Site</b>	<b>Construction</b>
<b>Mondays to Fridays</b>	08h00 – 17h00		08h00 – 15h00	
<b>Saturdays / Sundays / After Hours</b>	Must be arranged and approval sought from land owner			
<b>Public Holidays</b>	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 and land owner for prior sanction thereto.

### Security

The development is located in a secure and controlled environment and therefore individual watchmen will not be necessary 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 security. 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 Civil Contractors camp may be situated on site. The contractor's camp is to accommodate the contractor stores, servicing area for vehicles and machinery, as well as adequate ablution facilities for employees.

### **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.

## **Demarcation and Fencing**

Construction areas and access routes must be clearly demarcated to restrict access/egress across such demarcated lines and minimise environmental impact. Areas clearly defining owner's property will equally be demarcated. Drawings of such will be available and on display. Each construction site must be demarcated before construction commences and construction personnel will not be allowed beyond the construction perimeter of the site. All activities including stockpiling must occur within this demarcated area. The Contractor responsible shall fund reinstatement or rehabilitation of damaged areas and features.

Physical demarcation of construction sites should at the very least be via colour coded posts at least 1,5m high. Relative small construction areas care to be fenced with wooden or metal post at 3m centres with 1 plain wire strand tensioned horizontally at 900mm from ground level. Commercially available danger tape must be wrapped around the wire strand. For large areas, like fairways, these posts are to be at 15m centres with 5 equidistant easily visible lime spot markings in between.

The onus here will fall on the contractors to ensure all respect these no-go lines. Failure to ensure discipline will lead to the immediate erection of more physically challenging structures.

Building on the erven is to take place within the maximum demarcated area of 3m beyond the edge of the development building footprint at every point at all times. The demarcated area should be sufficiently hoarded using 1.8m high shade cloth on three sides supported by gum poles in order to contain the building process and materials and protect the nature outside of this area. The Contractor shall ensure that the hoarding is kept in good condition throughout the duration of the building contract and should ensure that removal takes place at the end of the contract without damaging the surrounding vegetation. No building, dumping, storage of building materials, preparation of building materials, or movement of any persons is to occur outside the hoarded area. The storage of construction materials is in special demarcated on erf areas only. The Contractor shall take measures to control the corrosive effects of storm-water runoff particularly in the hoarded-off areas. No run-off oil, cement, or any other building material is to be permitted, or allowed to enter the storm-water system or natural areas.

In the event that sensitive features are threatened by construction activities, the temporary fencing off of these areas or the construction area, when working in a mainly natural environment, is recommended.

The waste water treatment system must be fenced in with the appropriate signage to prevent unauthorised access to the treatment plant.

## **Indigenous Fauna and Flora**

Indigenous plants or wild animals including reptiles, amphibians, birds, etc may not be damaged or harmed or interfered with. Vegetation removed as part of the legitimate development requirements is excluded. Trapping, poisoning and/or killing of animals is specifically and strictly forbidden.

All indigenous vegetation and topsoil may be removed from the areas to be developed after a search and rescue has been undertaken beforehand if necessary. Material must be stockpiled and stored at site identified by/with ECO, and used by the landscape contractor for the re-vegetation and landscaping of disturbed areas on the property.

## **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.

All soil conservation structures shall be maintained at the landowner's expense to the satisfaction of the executive officer and may not be changed, destroyed or removed without prior written consent from the executive officer.

Except on authority of a written permission, no land user may:

- cultivate any virgin soil or land with a slope of more than 12% or land within 10 meters horizontally outside the flood area of a water course.
- utilize the vegetation in a vlei, marsh or water sponge or within a flood area of a water course or may drain or cultivate a vlei, marsh or water sponge.
- divert run-off water from a water course to any other water course.

## **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 discharge layout and design must provide management the opportunity to manage water application processes during discharge by closing certain lines or delivery points to prevent over discharge especially during rainy season.

## **Heritage 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.



## **Fuel and Lubricants Handling Program**

Any equipment on site re-fuelling will be from a sturdy 500 litre maximum diesel cart with anti leak and spill provisions in place at all times. Servicing of construction vehicles and machinery to take place only 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 of 110 % of the tank 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 and management; 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.

A monitoring system must be in place during the construction phase to monitor and prevent the spillage of potential damaging liquids.

An emergency plan must be in place for the handling of accidental spillages.

### ***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 of 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 only 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 further 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 under proof of delivery at a hazardous waste disposal site. Any contaminated 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 hazardous waste handling 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.

## **Top Soil and Material Removal & Stockpiling**

Soil stockpiles shall be convex and should not exceed 1.8 metre in height, and be covered by anchovy net as necessary to prevent wind erosion. Surplus sub-soil that becomes available during construction work and building operations must be used as fill material on alternate designated areas.

## **Vehicles Size Allowed**

Due to the road surfacing and limited road capacity restrictions are placed on any vehicle entering the property. Vehicle weight and size restrictions will be specified by the ECO in conjunction with the Project Engineer. As general rule of thumb vehicles licensed for road use are permitted except where they clearly will cause site damage if allowed onto site.

## **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 are 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.

## **Lights**

The Contractor shall ensure that any lighting installed on the site for his activities or security purposes does not interfere with road traffic or cause a direct disturbance to nearby residents, the surrounding community or other users of the area.

## **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.

The landowner must investigate the opportunity to recycle the builder's rubble.

### **Fires**

The collecting and use of vegetation for firewood on the property is prohibited. No open fires will be allowed on site and adequate fire fighting equipment should be available on site in good working order at all times as prescribed by the Fire Management protocols.

An emergency plan must be in place for the handling of accidental fires.

### **Herbicides, Pesticides and Fertilizers**

The Contractor must make sure of, and allow, all legal requirements regarding herbicide application procedures. It is vital that the Contractor becomes familiar with all the information detailed on every herbicide label before using it. The instructions on the label must be strictly followed throughout. The Contractor shall take all necessary precautions to prevent overspray of herbicides outside of the demarcated construction areas and onto natural veld. All personnel working with any herbicide, pesticide or fertilizer must be registered and comply with the requirements set in these registrations. The Contractor must put a system in place to control the use of herbicides and pesticides. All equipment associated to herbicides and pesticides must be maintained in accordance to the set standards. The disposal of all redundant and empty containers of herbicides and pesticides must be controlled and disposed of in accordance to the Integrated Waste Management Programme.

### **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. No blasting or use of explosives is permitted.

### **Emergency Preparedness Plan**

All mechanical equipment will have a duty / standby arrangement and if any mechanical equipment fails, the standby equipment will come into operation. A process consultant will regularly inspect the works quarterly to determine that the process is operated properly and will formally confirm accordingly.

Notification procedures to downstream users or affected parties must be given as soon as possible. Parts needing to be repaired will be repaired by a specialized consultant. The existing secondary, tertiary and irrigation dams will be utilized as storage dams according to the "Institute of Water Pollution Control: A Guide to the Design of Sewage Purification Works", published November 1973. A 12 day storage capacity in the storage dams must be provided to cater for plant breakdowns or prolonged heavy rains during which irrigation from the WWTW will be impossible. The capacity of the proposed upgrading of the WWTW provides adequate retention time should a power failure occur, providing sufficient time for emergency measures to be implemented.

The sites will be fenced in so that no person who is uninformed can enter the site.

(Also see OEMP contained Safety, Security and Emergency Procedures below.)

### **Checklists**

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

Four 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 and WL is 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.

**PROJECT START-UP CHECKLIST :: Contract:**

<b>ENVIRONMENTAL ASPECT</b>	<b>YES/NO (√ or X)</b>	<b>COMMENTS</b>
• 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
<ul style="list-style-type: none"> <li>The EMP is an item on the Monthly Site Meeting Agenda</li> </ul>		
<ul style="list-style-type: none"> <li>The Contractor has made staff numbers report available</li> </ul>		
<ul style="list-style-type: none"> <li>All new personnel on site are aware of the contents of the EMP and EA and have been through the environmental awareness course.</li> </ul>		
<ul style="list-style-type: none"> <li>Construction activities are being undertaken according to approved method statements</li> </ul>		
<ul style="list-style-type: none"> <li>Fuel and flammable material storage areas comply with general fire safety requirements.</li> </ul>		
<ul style="list-style-type: none"> <li>Public complaints have been recorded and dealt with in a satisfactory manner.</li> </ul>		
<ul style="list-style-type: none"> <li>Monthly Compliance Certificate has been completed.</li> </ul>		

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

**SITE CLOSURE CHECKLIST: Contract:**

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

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

**MONTHLY COMPLIANCE CERTIFICATE**

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

**CONTRACT: Contract:**

**ENGINEER'S REPRESENTATIVE: .....**

**SIGN: .....**

Date of Submission: \_\_\_\_\_

Key activities on site during the month: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**NON-CONFORMANCE**

Area of activity: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Reason:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Responsible Party:

\_\_\_\_\_

\_\_\_\_\_

Results:

---

---

---

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 ENVIRONMENTAL MANAGEMENT PROGRAMME

#### Introduction

The operational environmental management program (“OEMP”) is a procedure to achieve the environmental policy and goals.

The management programme 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 of the Waste Water Treatment Works.

#### 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 7 are specified goals:

- Goal 1: Waste Management and Pollution Control
- Goal 2: Water Quality and Storm Water Management
- Goal 3: Safety, Security and Emergency Procedures
- Goal 4: On-going Monitoring of Social Environmental Impacts

Goal 5: Discharge/Irrigation Management

Goal 6: Odour Management

Goal 7: Waste Water Treatment Works Maintenance and Management

### **Primary Management Objectives**

The primary management objectives of Theewaterskloof Municipality are:

- To manage and have sustained use of the natural systems within the context of the larger region, so as to conserve the biodiversity, ecological quality and beauty of the surrounding natural environment, especially on the property.
- 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 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.

### **Secondary Management Objectives**

- Appropriate management of land use to attain the objectives based upon predicted impacts, particularly of people and the operation, whilst focusing on the sustainable use of the natural environment.
- To promote an ethos of environmental education and awareness to all who live on or visit the property, focusing on the environmental management of the greater area.

### **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 and Pollution Control

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
<p><i>Ensure allocation of sufficient resources for on-going Integrated Waste Management and Pollution Control e.g. staff, equipment, budget.</i></p>	<p>Pollution and odours</p>	<ol style="list-style-type: none"> <li>1. Regular cleaning of waste water screens and waste holding facilities.</li> <li>2. All foul, waste waters and solids must be handled, treated and disposed of in such a manner that it creates no health nuisance to the abutting properties and the environment.</li> <li>3. Monitoring and management measures must be put in place to control and prevent the breeding of flies, odours and any health nuisance that may originate from these activities.</li> <li>4. No surface and groundwater may be polluted due to activity on site. Relevant requirements of the National Water Act (NWA), 1998 (Act 36 of 1998) must be complied with at all times.</li> <li>5. Any solid waste must be disposed of at a licensed landfill site.</li> <li>6. An experienced and qualified person will operate of the waste water system, doing checks and adjustments and ensuring that effluent samples for control purposes are regularly taken.</li> <li>7. Waste water process control consultants must be available.</li> <li>8. Additional pumps must be accessible for any long term emergency situation.</li> <li>9. Regular analysis of untreated and treated effluent to be monitored</li> <li>10. Daily water measurement and water recycling and water saving measures,</li> </ol>	<p>Six monthly initial independent audits of operations vs EMP and identification of those requirements that are not met. Responsibility: ECO</p>	<ol style="list-style-type: none"> <li>1. Adequate annual Budgets.</li> <li>2. On-going employment of ECO and in house maintenance staff</li> </ol>	<p>If pollution on site is detected immediate actions must be taken to contain the pollution. Within 24hours of detection the ECO must be informed of the incident, where after ECO will conduct a site visit and recommend further rehabilitation methods to be implemented. Depending on type and extent of pollution occurred specialists may be contacted to provide specific recommendations. An incident report to be compiled and sent to municipal and governmental authorities.</p>



		<p>thus controlling the waste water inflow to the system.</p> <ol style="list-style-type: none"><li>11. The water quality of the final wastewater discharged into environment and/or used for irrigation must conform to the DWA standards.</li><li>12. Soil chemistry of the discharge site must be monitored 6 monthly.</li><li>13. No solid waste may be incinerated on the property.</li><li>14. All vehicles transporting waste must be closed to avoid possible pollution of waste on transport routes.</li></ol>			
--	--	---	--	--	--

## **Waste Management and Pollution Control**

*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.
- Eutrophication (nutrient enrichment) of natural areas.
- Microbiological contamination of natural areas.
- Sediment & silt migration inflows.
- Harmful inorganic/organic compounds introduction into soil.

### **Identified Waste Streams Components**

Cellar wash water from Montagu Cellar.

### **Waste Management Strategy**

#### **1. Waste Avoidance**

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

#### **2. 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.

#### **3. Waste Disposal**

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

### **Minimisation of Effluent Production within the Community**

No water recycling is practiced within the community. There exist some opportunity in reusing treated waste water in various applications if the bacterial contamination can be addressed. In the meantime it is proposed that the treated effluent will be discharged into the environment.

### **Pollution Prevention**

Final effluent after treatment in the WWTW will comply to the General Limits for discharge (Government Notice No. 1191, dated 8 October 1999) as prescribed by DWA.

### **Storm water Pollution Management**

Storm water and effluent are being separated by cut-off trenches to ensure that storm water is not contaminated by effluent water.

### **Disposal of Solid Waste**

All solid waste will be disposed of at the municipal dump/landfill site.

## Goal 2: Water Quality and Storm Water Management Measures

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
<p>1] <i>Ensure allocation of sufficient resources for on-going Water Quality and Storm Water Management e.g. staff, equipment, budget</i></p>	<p>Pollution, odours, erosion and illegal quality of waste water discharge</p>	<ol style="list-style-type: none"> <li>1. Ensure no pollution of any water resources, including surface water, storm water and groundwater takes place as a result of any activities on the site.</li> <li>2. Ensure that no water other than storm water be discharged in the storm water system.</li> <li>3. Conduct monthly treated waste water quality tests.</li> <li>4. Conduct annual groundwater quality analysis</li> <li>5. Establish effective storm water management. Clear sediment and other material from storm water pipes and culverts and dispose of material in an appropriate manner. Monitor for erosion and other impacts at storm water outlets. Complete the provided incident report as required.</li> <li>6. The management of chemicals such as chlorine which are to be used during the treatment process should be handled as required in terms of the Occupational Health and Safety Act.</li> </ol>	<p>Six monthly initial independent audits of operations vs EMP and identification of those requirements that are not met.</p> <p><b>Responsibility:</b> ECO</p>	<ol style="list-style-type: none"> <li>1. Adequate annual Budgets</li> <li>2. On-going employment of ECO and in house maintenance staff</li> </ol>	<p>If pollution or erosion is detected immediate actions must be taken to contain the pollution or erosion. Within 24hours of detection the ECO must be informed of the incident, where after ECO will conduct a site visit and recommend further rehabilitation methods to be implemented. Depending on type and extent of pollution or erosion occurred specialists may be contacted to provide specific recommendations. An incident report to be compiled and sent to municipal and governmental authorities.</p>

## **Storm Water Management**

Contaminated storm water from the WWTW poses a pollution risk to the receiving environment, and hence management of contamination and discharge of this water is a critical component of the environmental management of the operational phase of the WWTW. The most effective measures relevant to the management of storm water relate specifically to the management of site runoff and design considerations, and accordingly shall already be in place.

With relevance to the maintenance of these storm water structures, the following considerations are relevant:

- Contamination of runoff on site
- Given the nature of the site, storm water must be managed appropriately to prevent contamination from the WWTW site onto surrounding properties;
- Sediment containing both organic and inorganic pollutants must be kept separately from unpolluted sediment and disposed of appropriately. The relevant pollution control official shall be contacted with regard to any unusual pollution not generally associated with operations to track down source of pollution;
- Litter must be trapped before entering the storm water system;
- Banks in die vicinity of any storm water outlets shall be regularly inspected (at least quarterly) for erosion or scour. The requisite erosion protection measures shall be implemented where required.

**Goal 3: Safety and Security Measures and Emergency Procedures**

<b>Objectives</b>	<b>Risks</b>	<b>Actions</b>	<b>Monitoring</b>	<b>Criteria/Targets</b>	<b>Remedial Actions</b>
<i>Ensure allocation of sufficient resources for on-going safety, security and emergency procedures. e.g. staff, equipment, budget</i>	Pollution, fire and health risks.	<ol style="list-style-type: none"> <li>1. Security access control to be in place.</li> <li>2. Security access control to action fire drill protocols as/ if needed</li> <li>3. All supply vehicles to site to comply with SANS 1518:2005 standards.</li> <li>4. All dangerous goods as classified under SANS 10228:2006 to be identified upon receipt and stored to the required standards.</li> <li>5. Emergency shut down activation plan to direct actions in the event of major catastrophe.</li> <li>6. The cellar must establish emergency procedures guidelines for sewage spills, pipe and pump station blockage/failure, flooding, containment removal and disinfection, power failure and fire.</li> <li>7. Implement the provided response procedures when emergency incident occurs and adhere to the provided indication of responsibilities, actions, and contact numbers in the case of an emergency.</li> <li>8. Complete the provided incident report checklist in the case of an emergency.</li> <li>9. Undertake annual education course to inform all operation staff of procedures.</li> <li>10. Revise emergency manual annually.</li> </ol>	<p>Six monthly initial independent audits of operations vs EMP and identification of those requirements that are not met.</p> <p><b>Responsibility:</b> ECO</p>	<ol style="list-style-type: none"> <li>1. Adequate annual Budgets approved.</li> <li>2. On-going employment of ECO and maintenance staff</li> </ol>	<p>Emergency Procedures as according to existing protocols to be implemented immediately (within 24 hours of detection) depending on type of emergency. (see below)</p>

## **Emergency Procedures**

Appropriate and timeous response to emergency situations will ensure that the environmental consequences of such situations are managed and curtailed. Accordingly, guideline for emergency procedures for broken pipelines, sewage spills, hazardous materials spills, power failures and fire are provided below, but must still be adapted when necessary by the municipality. In the event of an emergency situation arising, the requisite procedure shall be implemented. To ensure preparedness, all key staff at the WWTW shall be trained in terms of the requirements of these emergency procedures.

The correct and comprehensive reporting of incidents is important to ensure that roleplayers are kept informed; a complete record of the incident and its remediation must be kept on file and to facilitate learning. Accordingly, the incident report provided shall be completed when an incident has occurred and been addressed.

### a) Emergency procedure for a hazardous material spill:

- The site shall have a supply of absorbent material readily available to absorb any emergency hydrocarbon spills, and where possible this material shall be designed to encapsulate minor hydrocarbon spillage. The quantity of such materials shall be able to absorb/deal with a minimum of 200 litres of hydrocarbon liquid spill.
- Treatment and remediation of spill areas shall be undertaken to the satisfaction of the Engineer.
- The source of the spillage shall be isolated.
- The spillage shall be contained using sand berms, sandbags and pre-made booms.
- Cordon off and ensure safety of the spillage area.
- Clean-up spillage using appropriate technology and treatment product.
- Notify the Engineer and the ECO.
- Document the incident.

### b) Emergency procedure for a waste water spill:

- The municipality and Engineer shall be notified immediately of the incident.
- Close-off source of waste water.
- Keep staff and public out of the area until clean-up has been completed and post warning signs if necessary.
- Remove all machinery and equipment from the area.
- Determine the limits of the spill. If possible, contain spill by means of barricades or berms of sand or earth. Using powdered lime or HTH derivatives spread it over the entire spill area as soon as possible to control odours and mitigate pathogens. Any spill containment devices and structures including berms and fabric shall be installed immediately following the spill and shall be accessible and ready to use. Contain and divert the flow to the nearest sewer for redirection at the head of the works or alternative contingency as agreed.
- After the flows have been stopped and repairs made, clean up as much of the liquid as possible and rake or vacuum up waste water solids.
- Flush the affected area with clean water.
- If deemed necessary by the Engineer, materials underlying the area of the spill shall be excavated to a depth sufficient to remove spilled and leached materials.
- All material removed from a spill site shall be properly disposed of at a landfill site or returned to the head of the works.
- Clean material shall be used to replace any material excavated and the site shall be restored as close as possible to its condition prior to the spill.

- Smooth, hard surfaces such as asphalt or concrete shall be washed down after all material were removed from the spill site.
- The person(s) responsible for the spill shall document site remediation efforts with an incident report and shall submit a copy of the report to the Engineer and ECO. The incident report shall all of the above information and the duration of the incident, size of the affected area, and the agency contacts made during the notification, a detailed description of the repair and clean-up actions taken, and a statement on what steps will be taken to minimise or prevent a spill or overflow recurrence.
- Sampling shall be conducted in tributary upstream and downstream of where the drainage channel enters the river if the spill entered the drainage channel. Samples shall be analysed for faecal coliform and ammonia. Dissolved oxygen testing may also be needed to determine impact.

c) Emergency procedure in the event of a power failure:

- Contact the municipality and the electrical emergency number immediately, if no electrician is available contact Eskom customer care line.
- Do not approach transformer.
- If there is an associated fire, do NOT apply water, use only non water-based extinguishers.
- Arrange for the standby power supply to be switched on or for a standby generator to be brought onto site.
- Complete an incident report.

d) Emergency procedures in the event of a fire:

- Contact relevant parties as well as local fire department and report the location and details of the fire.
- Alert other staff calling "Fire".
  - Attend to human life in danger and remove all combustible items in the vicinity, guide people away from danger area.
  - If trained attempt to extinguish the fire without endangering life.
  - If uncertain or unable to extinguish the fire, leave the area and wait for assistance.
- Complete and incident report.

e) Emergency contact details:

A list of emergency contact numbers must be posted on site. As a minimum, the following emergency services must be included on the list-

- Environmental Department
- Local Fire Department
- Local Disaster Management
- Municipality
- Ambulance Services
- Hospital
- South African Police Service
- Electricity/Water Services
- Eskom Customer Care Line



**Goal 4: On-going Monitoring of Social Environmental Impacts**

<b>Objectives</b>	<b>Risks</b>	<b>Actions</b>	<b>Monitoring</b>	<b>Criteria/Targets</b>	<b>Remedial Actions</b>
<p><i>Ensure allocation of sufficient resources for on-going monitoring of environmental impacts. e.g. staff, equipment, budget</i></p>	<p>Pollution, nuisances and health risks.</p>	<ol style="list-style-type: none"> <li>1. Internal formal management inspections on a weekly and monthly basis.</li> <li>2. External six monthly to yearly audits</li> <li>3. Annual report back to community forum on results and outcomes of the monitoring and audit.</li> <li>4. Keep a complaint register and attend to issues recorded immediately.</li> </ol>	<p>Six monthly initial independent audits of operations vs EMP and identification of those requirements that are not met. <b>Responsibility:</b> ECO</p>	<ol style="list-style-type: none"> <li>1. Adequate annual Budgets approved.</li> <li>2. On-going employment of ECO and maintenance staff</li> </ol>	<p>No remedial actions required, only on-going monitoring as indicated.</p>

### Goal 5: Discharge/Irrigation Point Management

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
<p><i>Ensure allocations of sufficient resources e.g. staff, equipment, budget,) for on-going environmental management at the discharge point</i></p>	<p>Changes to the environment.</p>	<ol style="list-style-type: none"> <li>1. Treated wastewater should not be discharged directly into the environment but should go through a screen.</li> <li>2. Monitoring of the groundwater quality and terrestrial habitat integrity should take place at a low frequency (during spring and early winter) to allow for adaptive management if necessary.</li> <li>3. Any impacted areas within the development zone should be rehabilitated after the construction phase. Follow-up work should be carried out after rehabilitation to ensure that no invasive plants are established.</li> <li>4. Monitor quality and quantity of effluent being discharged. Completion of consulting chemist monthly Inspection Report. File report on site as well as with municipality.</li> <li>5. Soil samples from the discharge area must be evaluated for nutrient levels on a 6 monthly basis.</li> <li>6. Annual groundwater analysis must be taken from the nearest borehole/groundwater resource.</li> </ol>	<p>Six monthly initial independent audits of Operations vs EMP and identification of those requirements that are not met. <b>Responsibility:</b> ECO</p>	<ol style="list-style-type: none"> <li>1. Adequate annual Budgets approved.</li> <li>2. On-going employment of ECO and maintenance staff</li> </ol>	<p>If pollution or erosion is detected immediate actions must be taken to contain the pollution or erosion. Within 24hours of detection the ECO must be informed of the incident, where after ECO will conduct a site visit and recommend further rehabilitation methods to be implemented. Depending on type and extent of pollution or erosion occurred specialists may be contacted to provide specific recommendations. An incident report to be compiled and sent to municipal and governmental authorities.</p>

## **Management Environment Where Effluent is Discharged**

Monitoring and management of the receiving environment is critical to ensure that the desired ecological status is achieved and maintained. In particular the following aspects need to be addressed:

- Quality management of effluent being discharged or irrigated;
- Storm water management; and
- Ecosystem health monitoring.

Monitoring of the above environmental aspects will furthermore ensure compliance with the Waste License to be issued for the Montagu WWTW.

### **Legal obligations:**

Part 6 of the National Water Act (“NWA”), 1998 (Act No. 36 of 1998) provides for the use of water by the publishing of General Authorisation (“GA”) in the Government Gazette. Water use under GA must be registered with, but does not require license from DWA. Section 3 of the Revised GA provides for the discharge of waste or water containing waste into a water resource. Although treated waste water at the cellar will not be discharged into a water resource, but into the environment the discharge waste water quality will be treated to General Limits as set by DWA for discharging into a water resource. Provided within this section are effluent quantity and quality requirements that must be met as part of the GA and the implementation of the included environmental monitoring conditions.

Up to 2 000 cubic metres of wastewater may be discharged into a water resource not listed, providing that the General Limits with regard to substance and parameters provided in Table 1.1 below are met:

**Table 1.1: Wastewater limit values applicable to discharge of wastewater into a water resource.**

**Table 2.2: Wastewater limit values applicable to discharge of wastewater into a water resource.**

SUBSTANCE/PARAMETER	GENERAL LIMIT	SPECIAL LIMIT
Faecal Coliforms (per 100 ml)	1 000	0
Chemical Oxygen Demand (mg/l)	75 (i)	30(i)
pH	5,5-9,5	5,5-7,5
Ammonia (ionised and un-ionised) as Nitrogen (mg/l)	5	2
Nitrate/Nitrite as Nitrogen (mg/l)	15	1,5
Chlorine as Free Chlorine (mg/l)	0,25	0
Suspended Solids (mg/l)	25	10
Electrical Conductivity (mS/m)	70 mS/m above intake to a maximum of 150 mS/m	50 mS/m above background receiving water, to a maximum of 100 mS/m
Ortho-Phosphate as phosphorous (mg/l)	10	1 (median) and 2,5 (maximum)
Fluoride (mg/l)	1	1
Soap, oil or grease (mg/l)	2,5	0
Dissolved Arsenic (mg/l)	0,02	0,01
Dissolved Cadmium (mg/l)	0,005	0,001
Dissolved Chromium (VI) (mg/l)	0,05	0,02
Dissolved Copper (mg/l)	0,01	0,002
Dissolved Cyanide (mg/l)	0,02	0,01
Dissolved Iron (mg/l)	0,3	0,3
Dissolved Lead (mg/l)	0,01	0,006
Dissolved Manganese (mg/l)	0,1	0,1
Mercury and its compounds (mg/l)	0,005	0,001
Dissolved Selenium (mg/l)	0,02	0,02
Dissolved Zinc (mg/l)	0,1	0,04
Boron (mg/l)	1	0,5

Revision of General Authorisation in terms of section 39 of the national Water Act, 1998 (Act No. 36 of 1998) Gazette No. 26187 26 March 2004, Table 3.1.

**Table 1.2: Monitoring requirements for domestic wastewater discharges of between 1000 and 2000 cubic metres.**

DISCHARGE VOLUME ON ANY GIVEN DAY	MONITORING REQUIREMENTS
1 000 to 2 000 cubic metres	pH Electrical Conductivity (mS/m) Faecal Coliforms (per 100 ml) Chemical Oxygen Demand (mg/l) Ammonia as Nitrogen (mg/l) Nitrate/Nitrite as Nitrogen (mg/l) Free Chlorine (mg/l) Suspended Solids (mg/l) Ortho-Phosphate as Phosphorous (mg/l)

Revision of General Authorisation in terms of section 39 of the national Water Act, 1998 (Act No. 36 of 1998) Gazette No. 26187 26 March 2004, portion of Table 3.2.

Furthermore, Section 3 of the NWA requires the establishment of a monitoring programme to establish both the quality and quantity of the discharge. The monitoring program must include:

- Weekly quantity monitoring; and
- Quality monitoring by monthly grab sample and the analysis of specific substances as set out in table 1.2.

Monitoring must be undertaken by a laboratory that has been accredited under the South African National Accreditation System in terms of SABS Code 0259. Monthly submission to responsible authority of the following is required:

- Quantity of wastewater discharged;
- Quality of wastewater discharged;
- Details of the monitoring program/s; and
- Details of failures and malfunctions in the discharge system and details of measures taken.

**Quality and quantity of discharged/irrigated effluent:**

As highlighted in the preceding sections, the quantity and quality of the effluent discharged from the WWTW by means of irrigation and/or into the environment must both be monitored respectively. The consulting chemist contracted to undertake the monthly monitoring at the WWTW must provide the monthly report to the municipality and it must be kept on file for compliance evidence.

This monitoring of both quantity and quality will ensure compliance with the “General Limit” as stipulated by DWA and required as part of the EMP.

## Goal 6: Odour Management

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
<i>Ensure allocations of sufficient resources e.g. staff, equipment, Budget, for on-going air quality odour management</i>	Air pollution. Complaints from neighbouring properties and unpleasant environment to work in due to odour.	<ol style="list-style-type: none"> <li>1. Monitor odour levels continually to ensure acceptable levels</li> <li>2. Implement corrective actions if odours are unacceptable.</li> <li>3. Record any public complaints considering odours and implement corrective action immediately.</li> </ol>	<p>Six monthly at start and then yearly audits of operations vs EMP to identify those requirements that are not being met.</p> <p>Responsibility for Management and Mitigation: Management. The Environmental Health and Safety Manager.</p>	<p>Adequate annual Budgets.</p> <p>On-going employment of ECO and in house maintenance staff</p>	<p>Refer to text below for more detail.</p>

### Goal 7: Waste Water Treatment Works Management

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
<i>Ensure allocation of sufficient resources e.g. staff, equipment, Budgets, for on-going water, energy and resource demand management and efficiency.</i>	Pollution and odours	<ol style="list-style-type: none"> <li>1. Develop Operation and Maintenance manual of procedures with technical guidelines</li> <li>2. Establish regular reporting on maintenance as part of manual</li> <li>3. Undertake regular inspection and maintenance of all infrastructures to ensure in working order and to assess damage/ deficient equipment.</li> <li>4. Revise maintenance manual on an annual basis, recording when the manual was last revised</li> <li>5. Waste water treatment works area must be banded to prevent pollution that may occur on groundwater source.</li> </ol>	<p>Six monthly at start and then yearly audits of operations vs EMP to identify those requirements that are not being met.</p> <p>Responsibility for Management and Mitigation: Management. The Environmental Health and Safety Manager.</p>	<p>Adequate annual Budgets.</p> <p>On-going employment of ECO and in house maintenance staff</p>	<p>Refer to text below for more detail.</p>

## **Maintenance and Management Procedures**

The on-going, proactive and preventative maintenance of the WWTW infrastructure is vital in reducing the risks of infrastructure failure or “upset” conditions that could result in the accidental discharge of partially or untreated effluent into the environment. It thus forms a critical consideration in the management of the environmental impacts during the operational life of the WWTW. Defined maintenance and emergency procedures will ensure the risk of accidents is reduced and that should an emergency situation occur the impacts of that emergency are mitigated and this limited.

### **Maintenance procedures:**

As part of the technical requirements for the upgrade, a detailed Operation and Maintenance Manuals (“OMM”) must be compiled for the WWTW, and implemented by management during the operation of the works. The manual must provide detailed guidance on operation of all machinery and associated systems as well as related maintenance procedures, including maintenance schedules. Implementation of this manual by management will facilitate the proactive management of potential risks and this in averting impacts on the receiving environment, to ensure effective and efficient implementation. Accordingly, the OMM shall be regarded as an integral component of the EMP.

The WWTW OMM must include, but no be limited to, the following sections:

- Plant Safety (including personnel safety and equipment safety);
- Equipment Summary (including irrigation infrastructure);
- Plant Description (including capacity and sizes of all infrastructure);
- Plant Operation (including commissioning start-up checklists and normal operation checklists); and
- Maintenance Schedules (including general care and maintenance, maintenance log, daily operating checks, monthly maintenance procedures and annual maintenance procedures)

The maintenance procedures set out in the OMM will provide specific guidance in terms of the monitoring and maintenance of the key mechanical and electrical equipment. These procedures will specify the equipment item and specific component of each piece of equipment requiring checking, the scope and nature of the check that is to be carried out including detailed instructions related to the specific check, and the programme for conducting each check. Complete schedules must be kept on site to provide a complete compliance record.

An experienced and qualified person must supervise the operation of the wastewater treatment works, do the checks and make the adjustments while also ensuring that samples are taken regularly as required by the monitoring system.

Own in house or contracted suitable Mechanical and Electrical maintenance staff must be available upon request.

## **Environmental Reporting**

In order to ensure that the necessary environmental issues are adequately addressed and recorded, the following environmental reporting shall be undertaken:



- Incident reporting; and
- Compliance reporting

See below for a template of an Incident Report to serve as a guideline for the recording and addressing of emergency incidents as and when they occur.

Upon written request, the municipality should submit the following information on a monthly basis to the responsible authority:

- The quantity of wastewater discharged from the works;
- The quality of wastewater discharged from the works;
- Details of the monitoring program/s implemented; and
- Details of failures and malfunctions in the discharge system and details of measures taken.

**ENVIRONMENTAL INCIDENT REPORT**

<b>DATE:</b>	<b>File Ref:</b>
<b>NAME:</b>	<b>Copy to:</b>
<b>EXACT LOCATION OF INCIDENT:</b>	

**SECTION 1 : DESCRIPTION OF INCIDENT**

**SECTION 2 : REMEDIAL ACTION REQUIRED**

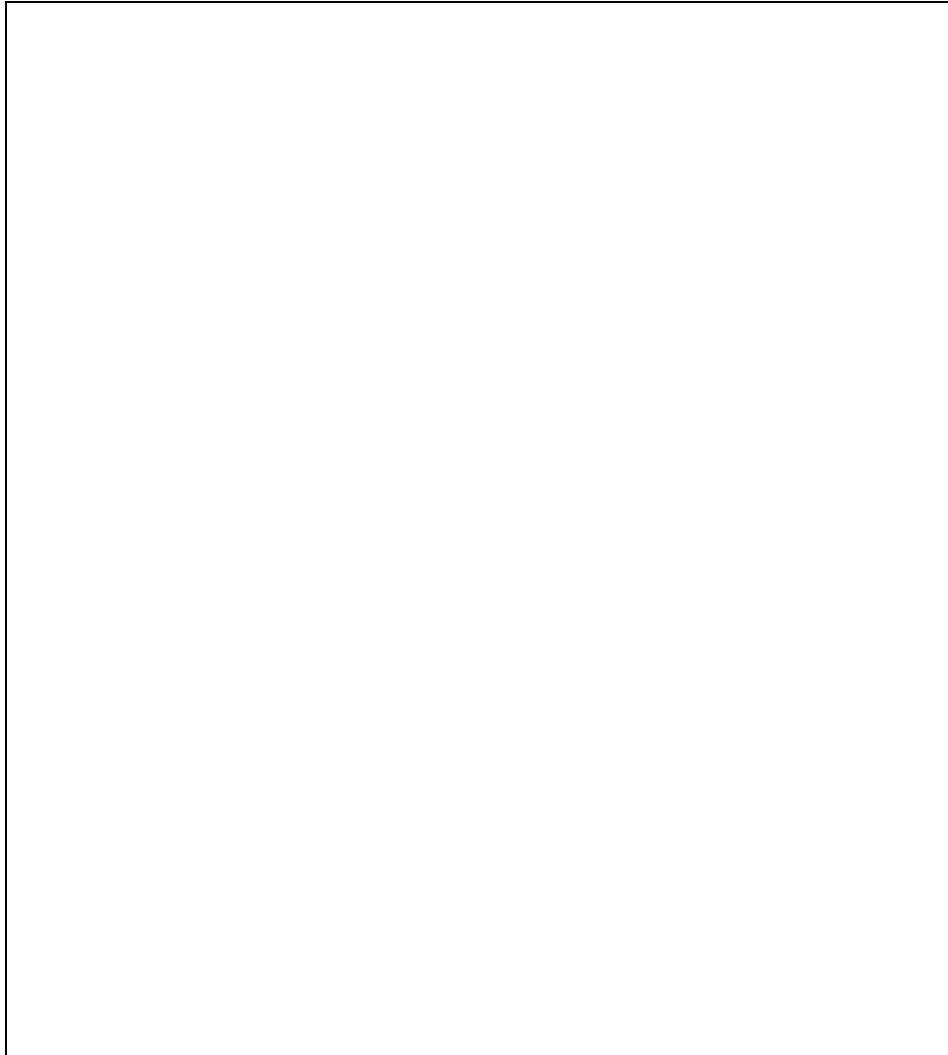
Remedial Action Due Date: \_\_\_\_\_  
Confirmation of implementation: Name: \_\_\_\_\_ Date: \_\_\_\_\_

**SECTION 3 : RELEVANT DOCUMENTATION**

**SECTION 4 : SIGNATURES**

<b>Municipal Engineer:</b>  Name: ..... Date: _____
<b>ECO:</b>  Name: ..... Date: _____

**SECTION 5 : DRAWING/SKETCH**



## **Decommissioning Phase EMP**

As the final phase in any 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 Quality
- Terrestrial Flora Rehabilitation monitoring

## **CHAPTER 8**

### **Environmental Awareness Course**

This section of the report is included herewith below in compliance with Section 24 N 3 © 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 &

---

## **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!



ATTENDANCE REGISTER FOR .....	
PLACE .....	TRAINER.....
NAME & SURNAME	SIGNED
SIGNED .....	DATE                      &                      TIME .....

## **CHAPTER 9**

### **Updating/adapting of the EMP**

Although care has been taken to address all current known relevant environmental issues for the development, it may 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 for formal advice to the regulator (DEA&DP) as required.

### **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). Guideline Document for the ECO / ESO and the ER

Department of Water Affairs and Forestry. 1996. South African Water Quality Guidelines Volume 7: Aquatic Ecosystems 2<sup>nd</sup> Edition

Department of Water Affairs and Forestry. 2004. Revision of General Authorisations in terms of Section 39 of the National Water Act, 1998, (Act No. 36 of 1998)

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.

Water & Wastes Utilisation Solutions (2008) *Langeberg & Ashton FoodsFood (Pty) Ltd Water Use Assessment Report*. Water Use Assessment Report Vol 1 – Langeberg & Ashton FoodsFoods: Wastewater disposal license application. April 2008.

Belcher T & Herdien E (2010) *Basic Fresh Water Assessment for the Proposed Expansion of Langeberg and Ashton Foods Wastewater Treatment Systems on Portion 3 of Farm 33 Wilde Paardehoek Ashton*. February 2010.