

ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE MARYKE BOERDERY CATTLE HOUSING EXPANSION, MALMESBURY

FEBRUARY 2019

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Title:
**MARYKE BOERDERY CATTLE HOUSING
 REVISED DRAFT ENVIRONMENTAL MANAGEMENT
 PROGRAMME**

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Verification	Capacity	Name	Signature	Date
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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 19011:2011) 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.
Contractor:	An employer, as defined in section 1 of the Occupational Health and Safety Act 85 of 1993, who performs construction work and includes principal contractors.
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.
Developer:	One who builds on land or alters the use of an existing building for some new purpose.
Independent:	Is independent and has no interest in any business related to the development site, nor will receive any payment or benefit other than fair remuneration for the task undertaken.
Groundwater:	Subsurface water in the zone in which permeable rocks, and often the overlying soil, are saturated under pressure equal to or greater than atmospheric.
Landowner:	Holder of the estate in land with considerable rights of ownership or, simply put, an owner of land.
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 under the Threatened or Protected Species regulations as well as 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.
Site:	Property(s) or area where the proposed development will take place.

ACRONYMS

DEA&DP:	Department of Environmental Affairs and Development Planning
DWS:	Department of Water and Sanitation
ECO:	Environmental Control Officer
EA:	Environmental Authorisation
EIA:	Environmental Impact Assessment
EM:	Environmental Manager
EMP:	Environmental Management Programme
EO:	Environmental Officer
ER:	Engineer's Representative
I&AP:	Interested and Affected Party
IEM:	Integrated Environmental Management
PM:	Project Manager
SANS:	South African National Standards

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DEVELOPER'S COMMITMENT

The facility has committed itself to a set of values that include the maintenance of good relations and transparent communications with all stakeholders, and the dynamic engagement of the larger community.

The facility undertakes to implement suitable management systems for all the areas and aspects of this operation. This will ensure that development itself and management of the project will comply with legal, technical, environmental and transformation policies and standards.

The facility, in drafting this EMP for implementation, intends to enable continuous improvement in legal compliance and the sustainable operation of the site.

The EMP intends to change the way in which the owners, the construction process they have commissioned and the contractor plan for and manage resources to achieve sustainability.

The satisfactory implementation of the EMP on site will require both the full support and commitment of all personnel.

CHAPTER 1

1.1. Executive Summary

This EMP has been prepared principally in compliance with the requirements of section 24N and Section 34 of the National Environmental Management Act 107 of 1998. This document, together with the conditions in the Environmental Authorisation, and the conditions in the Waste Management Licence, must be adhered to.

The EMP must be included as part of all contract documentation for all contractors in the construction and operational phases of the development.

The Author and Eco Impact Legal Consulting (Pty) Ltd ("Eco Impact")

Nicolaas Hanekom is a registered Professional Natural Scientist in the ecological science field with the South African Council for Natural Scientific Professions ("SACNASP") and a qualified EAP who holds a Masters Technologiae, Nature Conservation ("Vegetation Ecology and Biodiversity Assessment") degree from the Cape Peninsula University of Technology.

He further qualified in Environmental Management Systems ISO 14001:2004, at the Centre for Environmental Management, North-West University, as well as Environmental Management Systems ISO 14001:2004 Audit: Internal Auditors Course to ISO 19011:2003 level, from the Centre for Environmental Management, North-West University qualifying him to audit to ISO/SANS environmental compliance and EMS standards.

He has been responsible for many environmental impact assessments and several EIA, waste license and atmospheric emission license applications as well as being involved in the implementation of several environmental management systems.

The cattle housing has appointed Eco Impact to prepare an Environmental Management Programme that meets the technical standards as required by DEA&DP.

Author CV

Name of organisation: Eco Impact Legal Consulting (Pty) Ltd

Profession: Registered Professional Scientist (Ecology) and Environmental Assessment Practitioner

Position in Firm: Director, Environmental Management

Date of Birth: 01/02/1967

Years doing EIA's: 12 years

BIOGRAPHICAL SKETCH

Nicolaas Hanekom is a registered Professional Natural Scientist (Ecology) with the South African Council for Natural Scientific Professions ("SACNASP") and a qualified Environmental Assessment Practitioner ("EAP") who holds a Masters Technologiae, Nature Conservation ("Vegetation Ecology and Biodiversity Assessment") degree from the Cape Peninsula University of Technology.

He further qualified in Environmental Management Systems ISO 14001:2004, at the Centre for Environmental Management, North-West University, as well as Environmental Management Systems ISO 14001:2004 Audit: Internal Auditors Course to ISO 19011:2003 level, from the Centre for Environmental Management, North-West University qualifying him to audit to ISO/SANS environmental compliance and EMS standards.

Nicolaas has presented lectures in two subjects at the Cape Peninsula University of Technology. He has 26 years of ecological science experience, working for Free State and Western Cape departments of environmental affairs (Nature Conservation) and conducted over 60 ecological impact assessment reports since his registration as a professional scientist in 2011.

TERTIARY EDUCATION

- National Diploma, Nature Conservation (Cape Technikon)
- B. Tech Degree in Nature Conservation (Cape Technikon)
- M.Tech in Nature Conservation (Cape Peninsula University of Technology)

PROFESSIONAL SOCIETIES/ APPROVALS

- South African Council for Natural Scientists Professions Pri.Sci.Nat (Ecological Science)

KEY EXPERIENCE

1. Student, Practical year at Bontebok National Park (1992)
2. Assistant Reserve Manager at Gariiep Dam Nature Reserve (1993 - 1998)
3. Reserve Manager, Conservation Services Manager for Western Cape Nature Conservation Board (1998 - 2001)
4. External Lecturer at Cape Peninsula University of Technology (2003 - 2005)
5. Director: Environmental Management at Cape Lowlands Environmental Services (2006 – 2010)
6. Director: Environmental Management and lead Environmental Impact Assessment Practitioner at Eco Impact (Pty) Ltd (2010 – to date)

Extensive Environmental Impact Assessment experience for inter alia with some developments:

- Uilenkraal Cattle Housing
- ASLA Arniston Housing
- ASLA Beaufort West Phases 1 – 3
- ASLA Bredasdorp Affordable Housing
- ASLA Chatsworth Low Cost Housing
- ASLA Darling Low Cost Housing
- ASLA De Rust Low Cost Housing
- ASLA Dysselsdorp Low Cost Housing
- ASLA Laingsburg Housing
- ASLA McGregor Housing
- ASLA Prince Albert Housing
- ASLA Rosevalley Emergency UISP Housing (Oudtshoorn)
- De Hoop Sand Mining Permit
- DRDLR Elandskloof Housing (Citrusdal)
- La Rhine Sand Mining Permit
- Lammershoek Sand Mining Permit

- Matlapeng - Witteklip Mixed Use Developments
- Vruchtbaar Sand Mining Permit
- Wellington Erf 2569 Housing Development
- Witzenberg Municipality Sand Mining Permit

Some publications:

Hanekom N. 2011. Solar Cape Photovoltaic Energy Generation Facilities land investigation in Northern Cape at Prieska, Kenhardt, Pella, Uptington, Pofadder and Keimoes

Hanekom N. 2011. Biodiversity and Ecological Baseline Survey for Abbotsdale Housing Project on Portion Of Erf 301 Abbotsdale (Malmesbury), Western Cape.

Hanekom N. 2011. Baseline Biodiversity and Ecological Assessment. GreenContinent Partners Photovoltaic Electricity Generation Facility. Farm Olyvenkolk 187/7, Kenhard.

Hanekom N. 2011. Baseline Biodiversity and Ecological Assessment Prieska Photovoltaic Power Generation Project, Prieska Commonage, Northern Cape.

Hanekom N. 2011. Baseline Biodiversity and Ecological Assessment. Solar Cape Photovoltaic Electricity Generation Facility. Farm Olyvenkolk 187/3&13, Kenhard.

Hanekom N. 2011. Biodiversity Assessment for Saldanha Bay Solar Park, Palama Saldanha Solar and Soventix SA Saldanha 1 on farms Farm 183, 190, 191 and Portion 5 Farm 191, Malmesbury

Hanekom N. 2012. Baseline Biodiversity and Ecological Assessment. GreenContinent Partners Photovoltaic Electricity Generation Facility. Farm Olyvenkolk 187/8, Kenhard.

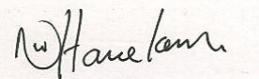
Hanekom N. 2012. Baseline Biodiversity and Ecological Assessment. Wine Estate Capital Management Photovoltaic Electricity Generation Facility. Farm Olyvenkolk 187/12, Kenhard.

Hanekom N. 2013. Biodiversity and Freshwater Ecosystems Baseline Survey. Bredasdorp Low Income Housing Project on Portion of Erf 1148, Bredasdorp.

Hanekom N. 2017. Baseline Biodiversity and Ecological Assessment. GreenContinent Partners Photovoltaic Electricity Generation Facility. Farm Olyvenkolk 187/6, Kenhard.

CERTIFICATION

I, the undersigned, certify that to the best of my knowledge and belief, these data correctly describe my qualifications, my experience, and me.



Nicolaas Hanekom
Pri.Sci.Nat (Ecology) 400274/11

1.2. Project Description

This section of the report is included in compliance with Section 24N (2) (e) of the National Environmental Management Act, 107 of 1998.

The proposed development will entail:

- The construction of 19 cattle housing units of approximately 1100m² each with an 5m service road in between the cattle housing; and
- Two cattle manure and urine collection pond of (36.8m x 210m x 1.5m deep and 36.8m x 130m x 1.5m deep.

Each cattle housing unit can house 115 cattle with a total of 2185 cattle to be housed at the facility.

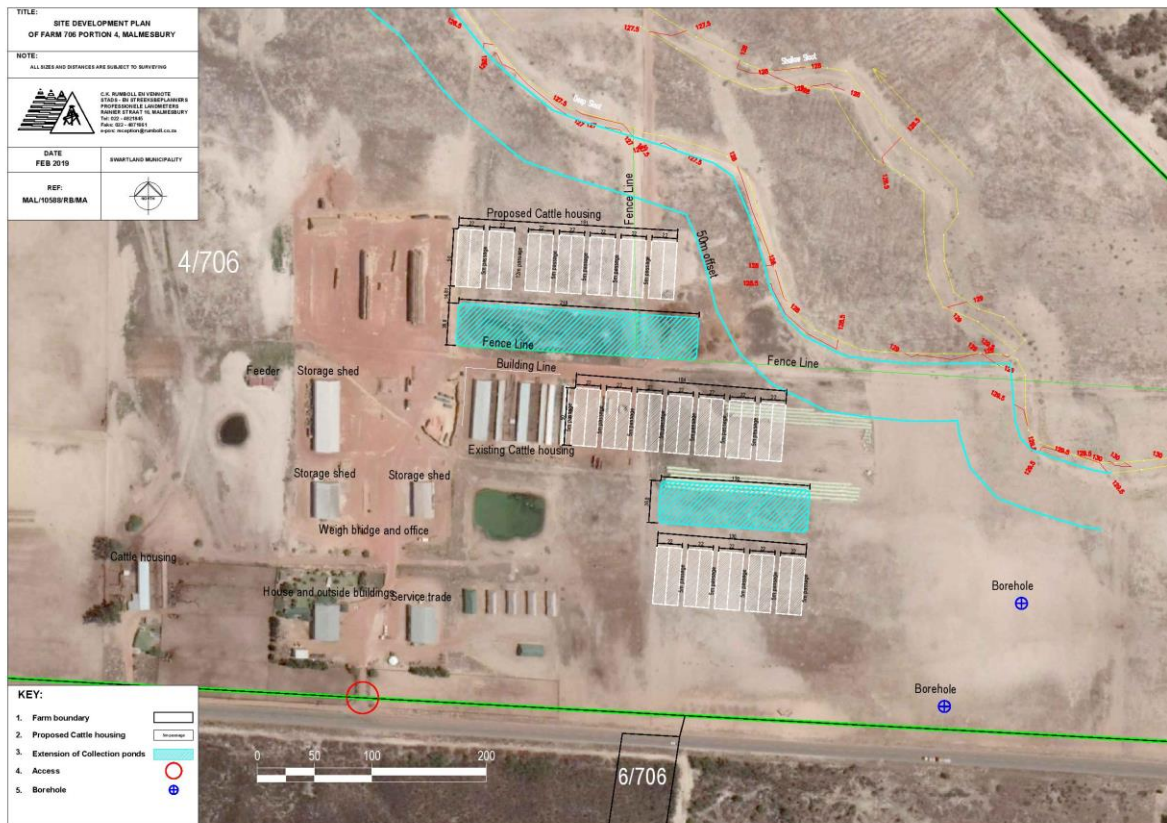


Figure 1: Sensitive Areas. The blue line indicating the 50m buffer area from the water course is the sensitive no go area on site.

Location alternatives – The property was the only alternative considered. Existing access, the existing cattle housing operational requirements and infrastructure were all considered when the location of the expansion facilities was taken in consideration on the property. No other location, site or property alternatives were considered as they are not feasible or reasonable due to the fact that the proposed activity is for the expansion of the existing cattle housing.

Activity alternatives - The activity was the only alternative considered. No other activity alternatives were considered as they are not feasible or reasonable due to the fact that the proposed activity is for the expansion of the existing cattle housing.

Layout or design alternatives – Two design and layout alternative was considered. The existing cattle housing, operations and facility designs were used and multiplied to increase the facility. The existing infrastructure on the farm, the non-perennial water course and operational requirements will all taken in consideration when the units were placed on the property. The existing water source from the borehole that is registered for the property and authorized by the Department of Water and Sanitation was used to determine the number of cattle that could be housed at the facility. The existing pond to collect urine and cattle manure was expanded to collect the manure and urine. From the pond the urine and manure will be treated at the con site licensed compost facility before it will be utilized as compost fertilizer. The clay content on the farm is of good quality and impermeable and will be used to line the ponds. The same clay was used to line the compost facility and its collection pond on the property.

Technology alternatives - No technological alternatives other than dual flush toilet systems and energy efficient lighting are considered at the facilities. Furthermore, the facility will capture rain water from the roofs in tanks to help in the supply of water to the cattle to reduce the need from the ground water source.

Operational alternatives – No operational alternatives were considered or assessed. There are no feasible or reasonable alternatives. The existing cattle housing operations were considered in the

design of the facility in order to continue with the existing operations of the facility as this was developed over the years and is the best operations for the facility.

The No-Go Option - The No-Go option will result in the site remaining as is presently and the existing cattle housing will continue as is without the expanded infrastructure. However, the No-Go Option is nevertheless considered and assessed in relation to the potential implications of the proposed project, as required in terms of NEMA and its EIA Regulations.

Impact Summary

The assessment of these impacts before and after recommended mitigation is summarised in the table below. After mitigation, none of the impacts are assessed as being above LOW significance.

Construction phase:

- Disturbance to subsurface geological layers (low impact before mitigation and low impact with mitigation measures);
- Soil erosion and dust - (Low impact before mitigation and low impact with mitigation measures);
- Impact of construction activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures);
- Impact on Drainage Line / Groundwater resources - (High impact before mitigation and low impact with mitigation measures);
- Impact on surrounding and municipal planning policies and guidelines - (low impact before mitigation and low impact with mitigation measures);
- Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures);
- Increased jobs - (No impact before mitigation and positive impact with mitigation measures);
- Increased traffic due to the construction activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures);
- The potential impact of the proposed development on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures);
- Noise - (Low impact before mitigation and low impact with mitigation measures)

Operational phase:

- Soil erosion and dust - (low impact before mitigation and low impact with mitigation measures);
- Impact of operation activities on surface and underground water pollution - (High impact before mitigation and low impact with mitigation measures);
- Impact on Drainage Line / Groundwater resources - (High impact before mitigation and low impact with mitigation measures);
- Impact on surrounding land use and its potential effect on surrounding environment - (low impact before mitigation and low impact with mitigation measures);
- Impact on the indigenous terrestrial flora and habitat present in the area. Impact on the naturally occurring fauna present in the area - (Low impact before mitigation and low impact with mitigation measures);
- Increased jobs - (No impact before mitigation and positive impact with mitigation measures);
- Increased traffic due to the operation activities requiring various vehicles to come onto and leave the site - (Low impact before mitigation and low impact with mitigation measures);
- The potential impact of the proposed maintenance activities on archaeological, paleontological and heritage remains - (Low impact before mitigation and low impact with mitigation measures);
- Noise - (Low impact before mitigation and low impact with mitigation measures)

Decommissioning phase:

Similar to impacts associated with construction phase.

CHAPTER 2

This section of the report is included in compliance with Section 24N (2) (e) of the National Environmental Management Act 107 of 1998.

It deals with issues relating to the implementation of the EMP.

2.1 Organizational Structure

The organizational structure identifies and defines the responsibilities and authority of the various persons and organizations involved in the project. All instructions and official communications regarding environmental matters must follow the organizational structure.

The Environmental Official (EO), to whom the Engineer's Representative (ER) and/or Environmental Control Officer (ECO) must report and interact, must be the responsible client representative.

The EMP must be an agenda item at the monthly site and operations meetings and the responsible client representative(s) may attend these meetings in order to provide input with respect to compliance with the EMP.

2.2 Responsibilities and Functions of the Environmental Control Officer

The ECO will be responsible for monitoring, reviewing and verifying compliance with the EMP and/or EA by all contractors and site management during site visits.

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/or EA is adhered to at all times and by taking action if the specifications are not followed;
- monitor and verify that environmental impacts are kept to a minimum;
- review and approve construction method statements, with input as appropriate from the ER;
- assist the contractor in finding environmentally responsible solutions to problems;
- report on the environmental issues at the site meetings and other meetings that may be called regarding environmental matters, if requested by ER;
- inspect the site and surrounding areas regularly with regard to compliance with the EMP and/or EA;
- monitor the environmental awareness training for all 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 by the ER in a Site Instruction Book;
- ensure that activities on site comply with known legislation of relevance to the environment;
- recommend the issuing of penalties via the developer for contraventions of the EMP and/or EA;
- keep a photographic record of progress on site from an environmental perspective; and
- undertake a continual internal review of the EMP and/or EA and submit a report to the developer and the responsible DEA&DP Environmental Official according to EA conditions.

2.3 Agreed Work Plan and Site Visit Schedule of ECO

After initial construction start-up site visit it is recommended that an ECO site visit be conducted once a month during construction.

Information recording activity on site, and any guidelines or instructions emanating from there will be routinely made available electronically to the developer and applicable contractors 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.

2.4 Site Manager

The site manager will have the following environmental control responsibilities:

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

2.5 Contractors

As part of any tender, the tendering contractor must submit a first draft of a contractor's programme, to the developer which must include the environmental considerations to be followed prior to appointment.

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 must keep his personnel fully aware of environmental issues and ensure they show adequate consideration to all environmental aspects.
- Establish environmental signs to be erected on the construction site at locations identified by the ECO and approved by the engineer.
- Be responsible for the cost of the restoration of any damage caused, in environmentally sensitive areas, as a result of contractor responsibility regarding negligence. This must be done in accordance with the engineer / ECO's specifications.
- Take responsibility and active steps to avoid any increase in the fire hazard.
- The contractor must 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.

2.6 Record keeping of activities, inclusive of recording of non-compliances and corrective actions

The site must 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;
- corrective actions taken and penalties issued.

This information will be recorded in an appropriate manner in a site diary, registers, issues/warning book, etc.

2.7 Compliance with other legislation

It is important that all on site staff are aware of other relevant legislation that may relate to the activities taking place on site, especially local authority required compliances.

CHAPTER 3

Applicable Legislation, Policy and Environmental Principles

3.1 Applicable Legislation Identified

1. ADVERTISING ON ROADS AND RIBBON DEVELOPMENT ACT, 21 OF 1940
2. BASIC CONDITIONS OF EMPLOYMENT ACT, 75 OF 1997
3. WEST COAST DISTRICT MUNICIPALITY: FIRE SAFETY BY-LAW.
4. COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASES ACT, 130 OF 1993
5. CONSERVATION OF AGRICULTURAL RESOURCES ACT, 43 OF 1983
6. CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA, 1996
7. ENVIRONMENT CONSERVATION ACT, 73 OF 1989, WESTERN CAPE NOISE CONTROL REGULATIONS
8. EMPLOYMENT EQUITY ACT, 55 OF 1998
9. ENVIRONMENT CONSERVATION ACT, 73 OF 1989
10. FENCING ACT, 31 OF 1963
11. HAZARDOUS SUBSTANCES ACT, 15 OF 1973
12. LABOUR RELATIONS ACT, 66 OF 1995
13. NATIONAL HEALTH ACT 61 OF 2003
14. NATIONAL HEALTH ACT 61 OF 2003 REGULATIONS RELATING TO THE MANAGEMENT OF HUMAN REMAINS
15. NATIONAL BUILDING REGULATIONS AND BUILDING STANDARDS ACT, 103 OF 1977
16. NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 107 OF 1998
17. NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT, 39 OF 2004
18. NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 10 OF 2004
19. NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 59 OF 2008
20. NATIONAL FORESTS ACT, 84 OF 1998
21. NATIONAL HERITAGE RESOURCES ACT, 25 OF 1999
22. NATIONAL VELD AND FOREST FIRE ACT, 101 OF 1998
23. NATIONAL WATER ACT, 36 OF 1998
24. OCCUPATIONAL HEALTH AND SAFETY ACT, 85 OF 1993
25. TOBACCO PRODUCTS CONTROL ACT, 83 OF 1993

CHAPTER 4

This section of the report is included in compliance with Section 24N (2) (e) of the National Environmental Management Act, 107 of 1998.

COMPLIANCE

4.1 Monitoring and Auditing

4.1.1 Introduction

In keeping with current environmental and associated legislation, all environmental management procedures and actions must be reviewed and refined on an ongoing 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 the construction 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. Developer/landowner or custodian of the land

The developer/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. Contractor

Contractors are appointed to undertake the works as specified in the contract. It is the responsibility of the contractor to do whatever is necessary from their side to ensure that he or an appointed advisor is well versed in environmental studies, so that they 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.

4.1.2.3. Environmental Control Officer

An environmental control officer will manage and undertake monthly environmental inspections for the duration of the construction phase of the project as required.

The contractors or line management are answerable to the ECO for non-compliance. Issues of non-compliance raised by the ECO/EO 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 and 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.

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:

- to state compliance,
- partial compliance and
- non-compliance

Completed monitoring reports will be submitted to the project engineer, developer/landowner and the contractor, who will attend to issues. These reports must be kept on file and be made available upon request by any environmental authority requesting such.

All persons employed, the contractor or his sub-contractors, must abide by the requirements of these performance specifications as they apply to the works. Any employees, the contractor or his sub-

contractors found to be in breach of any of the environmental specifications, may be ordered to vacate the site forthwith and/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 must 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 EMP, legislation 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 developer/landowner will be informed via ECO monthly reports, as well as by means of direct instruction (if necessary) as to what corrective actions are required in terms of environmental compliance.

Disregard for an instruction, and failure to respond adequately to complaints from the public will be construed as non-compliance. Non-compliance may lead to parties being penalised.

In more serious cases, the ECO may give notice, and halt operations until such a time that the corrective action is taken and the site complies 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 developer/landowner 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 audited versus this EMP for effectiveness. ISO/SANS 19011:2011 auditing standards will be applied.

Audits will be undertaken at completion of the construction phases. Audit reports will be submitted to management, who will attend to all noted issues.

Construction activities must be audited by the ECO on a monthly basis against the relevant conditions of the Waste Management Licence with a summary thereof (i.e. indicating the partial and non-compliance and relevant mitigation measures) submitted to the Department on a monthly basis.

These reports must be kept on record and be made available upon request by the developer/landowner/custodian of the land and any environmental authority or I&AP requesting such.

4.4 Retentions and Penalties

It is recommended that a penalty retention system be combined with the penalty system to both motivate and compel the contractor to adhere to the EMP 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 only be paid to the contractor at the end of the contract), without creating the misunderstanding that adherence to the EMP 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.

4.4.1. 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 full 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 may then apply these retained funds to rectify the problem on site possibly making use of other or alternate 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, after having confirmed full compliance with the relevant performance and rehabilitation specifications.

4.4.2. Penalty System

A system of penalties will be introduced to reinforce environmentally sensitive and prudent behaviour. The maximum penalties that will be fined per incident that may be enforced are listed below. The penalty amount will be determined (inter alia) by the severity of the offence.

Non-compliance	R 5 000.00 (ex VAT) per non-compliant act, per day until compliance is achieved
Casual Litter on site resulting from operation	R250 / offence / day
Disposal of any litter or construction material in non-specified area or by non-compliant means	R5000 / m ³ / per day
Dumping of cement, concrete, fuel or oil in an area or other than that authorised and suitable	R10 000 per offence / day
Failure to use portable / toilets	R100 / observed incident or evidence of human excrement on site

In addition to the above, all costs incurred by the client / developer to remedy any damage will be the responsibility of the offender. All penalties must be paid over to the Cape West Coast Biosphere Reserve for use in conservation related projects after rehabilitation was done.

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.

4.5 Method Statements

Contractors must provide written statements for discussion with the ECO 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.

CHAPTER 5

This section of the report is included in compliance with Section 24N (2) (e) of the National Environmental Management Act 107 of 1998.

5.1. Good Housekeeping

The developer/landowner will ensure the maintenance of “good housekeeping” practices during operations.

This will help avoid several disputes regarding responsibility and will allow for the smooth running of the operation as a whole.

Good housekeeping extends beyond the environmentally sensitive construction methods to include the care for and preservation of the surrounding environment.

5.2 Record Keeping

The developer/landowner will ensure that a filing system, identifying all documentation related to the EMP, is established.

A list of reports likely to be generated during the project is set out below.

All applicable documentation must be included in the environmental filing system catalogue or document retrieval index.

- Approved EMP, authorizations, licenses or permits;
- 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;
- Complaints register;
- Environmental training manual;
- Environmental training attendance registers;
- Incident and accident reports;
- Emergency preparedness and response plans;
- Copies of all relevant environmental legislation;
- Permits and legal documents as part of emergency preparedness teams e.g. fire teams, etc.;
- Material data sheets of all chemicals utilised on site;
- Crisis communication manual;
- Disciplinary procedures;
- Monthly site meeting minutes during construction;
- All relevant permits;
- All method statements for all phases of the project;
- All Standard Operating Procedures developed for implementation during all phases of the project.

All registers and records should be kept on site and must be made available to the department on request.

5.3 Document Control

The developer/landowner will be responsible for establishing a procedure for 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 version 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.

5.4 Reporting Requirements

All advice and recommendations made by the ECO must with the project engineer/engineers compliance be recorded on site in the site instruction book/ suitable register for his attention.

All spills will need to be documented and reported to DWS and other relevant authorities.

CHAPTER 6

6.1. Public Communication Protocols

This section of the report is included in compliance with Section 24N (2) (e) of the National Environmental Management Act, 107 of 1998.

The developer/landowner must be responsible for regulating public access to information and compliance reporting.

The developer/landowner must respond to third party or public queries and complaints.

The developer/landowner must also be responsible for maintaining the compliance register to record complaints received and action taken. All complaints received by the facility must be documented.

CHAPTER 7

This section of the report is included in compliance with Section 24 N 2 (d - g) and 3 (a - b) of the National Environmental Management Act, 107 of 1998.

Goal for Planning and Design (PD)

Overall Goal for Planning and Design: Undertake the planning and design phase of the facility in a way that:

- Ensures that the design of the facility responds to the identified environmental constraints and opportunities.
- Ensures that pre-construction activities are undertaken in accordance with all relevant legislative requirements.
- Ensures that adequate regard has been taken of any landowner concerns and that these are appropriately addressed through design and planning (where appropriate).
- Ensures that the best environmental options are selected for the project.
- In order to meet this goal, the following objectives have been identified, together with necessary actions and monitoring requirements.

OBJECTIVE PD1: PRE-CONDITIONS

The following pre-conditions must be fully met before any construction activities 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 pipeline route.

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

The following equipment must be on every micro or sub 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

This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE PD2: 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. The variation of changes to the layout must be approved by the competent authority as per the EA conditions.

This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE PD3: ADVERTISING

The contractors may place no advertising material on the property unless prior formal written permission has been obtained from the landowner. Any advertising placed on the development site must comply with the relevant local authority legislation.

This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE PD4: ENSURE THE DESIGN AND LAYOUT RESPONDS TO THE IDENTIFIED ENVIRONMENTAL CONSTRAINTS AND OPPORTUNITIES

Project Component/s	Facilities; Access.
Potential Impact	Design fails to respond optimally to the environmental consideration.
Activities/Risk Sources	Poor consideration of the natural landscape features.
Mitigation: Target/Objective	<ul style="list-style-type: none"> • Clearly demarcated laydown area and access roads. • Clearly demarcated no-go areas. • Clearly defined site development plan.

Mitigation: Action/Control	Responsibility	Timeframe
Plan and conduct pre-construction activities in an environmentally acceptable manner.	Developer	Pre-construction
Access roads to be carefully planned to minimise the impacted area and prevent unnecessary over compaction of soil.	Developer	Design phase
As far as possible, existing roads must be used.	Developer	Design phase
Clearly designed storm water cut-off channels and collection dams with alignment for storm water run-off from composting site.	Developer	Design Phase
Develop a site specific waste management plan for the construction phase.	Developer	Pre-construction

The holder of an environmental authorisation has the responsibility to notify the competent authority of any alienation, transfer and, change of ownership rights in the property on which the activity is to take place.	Developer	Pre-construction
Fourteen (14) days written notice must be given to the Department that the activity will commence. The notification must include a date on which the activity will commence as well as the reference number.	Developer	Pre-construction
ECO to be appointed prior to the commencement of any authorised activities. Once appointed the name and contact details of the ECO must be submitted to the DEA&DP.	Developer	Pre-construction

Performance indicator	Design meets objectives and does not degrade the environment. Design responds to the mitigation measures and recommendations in the specialist studies and the BA report. Minimal impact on the surrounding land uses.
Monitoring	Ensure that the design implemented meets the objectives and mitigation measures in the specialist studies and BA report through review of the design by the Project Manager, Developer and the Contract or prior to the commencement of construction.

OBJECTIVE PD5: ENSURE EFFECTIVE COMMUNICATION MECHANISMS WITH THE VARIOUS STAKEHOLDERS

On-going communication with affected and surrounding landowners and key departments is important to maintain during the construction and operational phases of the development. Any issues and concerns raised should be addressed as far as possible in as short a timeframe as possible.

Project Component/s	Access roads; Damage to existing infrastructure or private property; Nuisance; Congestion / obstruction of roads.
Potential Impact	Impacts on affected and surrounding landowners and land uses.
Activities/Risk Sources	Construction activities; Delivery of materials to site.
Mitigation: Target/Objective	Effective communication with affected and surrounding landowners; Addressing of any issues and concerns raised as far as possible in as short a timeframe as possible.

Mitigation: Action/Control	Responsibility	Timeframe
Compile and implement a grievance mechanism procedure for the public to be implemented during both the construction and operational phases of the facility. This procedure should include details of the contact person who will be receiving issues raised by interested and affected parties, and the process that will be followed to address issues.	Developer	Pre-construction, construction and operational phase
Performance indicator	Effective communication procedures in place.	
Monitoring	An incident must be reported in the site book and monitored by the ECO.	

CONSTRUCTION AND REHABILITATION PHASE CIVIL CONTRACTOR

Goal for Construction Phase

Overall Goal for Construction (C):

Undertake the construction the development infrastructure in a way that:

- ensures that construction activities are properly managed in respect of environmental aspects and impacts;

- enables construction activities to be undertaken without significant disruption to other land uses in the area, in particular concerning noise impacts, dust, farming practices, traffic and road use, and effects on local residents;
- minimises the impact on the surrounding area;
- minimises impacts on avifauna and other fauna using the site; and
- minimises the impact on the heritage and historical value of the site
- minimise possible health impacts.

Objectives

In order to meet this goal, the following objectives have been identified, together with the necessary actions and monitoring requirements.

OBJECTIVE C1: WORKING HOURS

Civil & Construction Sites	
Mondays to Fridays	06h00 – 19h00
Saturdays & Public Holidays	06h00 – 17h00

Project Component/s	Development site; Access roads.
Potential Impact	Surrounding landowners and residents are exposed to noise; potential traffic congestion; and dust generated from the development site.
Activities/Risk Sources	Nuisance.
Mitigation: Target/Objective	<ul style="list-style-type: none"> • Effective communication with affected and surrounding landowners; addressing of any issues and concerns raised as far as possible in as short a timeframe as possible. • Construction activities should be restricted to weekday working hours. • Machinery and vehicles should be regularly maintained to prevent excessive noise. • All machinery and work activities must adhere to the requirements of the noise regulations. • Implement dust suppression if and when required. • Ensure delivery vehicles do not cause obstructions or delays to other road users through effective scheduling.

Mitigation: Action/Control	Responsibility	Timeframe
Contractors may only be present on the site during the public time hours.	Developer and contractor.	Construction phase.

Performance indicator	Effective communication and procedures in place.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C2: SAFETY

Project Component/s	Development site; Access roads; Adjacent landowners / users.
Potential Impact	Increased activity in the area may result in safety risks.
Activities/Risk Sources	The proposed development may result in an increase in crime levels.
Mitigation: Target/Objective	To protect all involved from incidents, injury or death.

Mitigation: Action/Control	Responsibility	Timeframe
Telephone numbers of emergency services, including the local fire-fighting services, must be posted conspicuously	Contractor	Construction phase

in the contractor's office and near the telephone. No firearms are permitted on the construction site, other than those authorised by the developer for the property security service provider if needed. Notices should be displayed at all public entrances to the property, warning visitors that they are entering a construction site.		
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Performance indicator	Effective communication and procedures in place.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C3: TRAFFIC / CONGESTION

Project Component/s	Development site; Access roads; Adjacent landowners / users.
Potential Impact	The construction machinery will only have a traffic impact on delivery to, and collection from the development site and are therefore regarded as negligible.
Activities/Risk Sources	The minor increase in traffic volumes at certain times of day will add to the existing traffic volumes. Deterioration of existing road as a result of heavy use by construction vehicles.
Mitigation: Target/Objective	<ul style="list-style-type: none"> • Avoid peak traffic hours (07h00 – 08h00 and 17h00 – 18h00) as far as possible; • Implementation of strict traffic safety measures and speed limits for all construction / delivery vehicles; • Road condition be monitored and, if need be, repaired to its original condition should any damage occur as a result of the development.

Mitigation: Action/Control	Responsibility	Timeframe
Implementation of strict traffic safety measures and speed limits for all construction / delivery vehicles. 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, sub-contractors and delivery vehicles adhere to this rule.	Contractor	Construction phase

Performance indicator	Effective communication and procedures in place.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C4: CONTRACTOR'S CAMP

Project Component/s	Laydown area; Access roads.
Potential Impact	Degradation of the natural environment inside/outside of the laydown area.
Activities/Risk Sources	Setting up and operation of the contractor's camp.
Mitigation: Target/Objective	Construction camp must be neatly fenced and construction site must be neat and tidy.

Mitigation: Action/Control	Responsibility	Timeframe
The contractor's camp will be indicated by and to landowner management and the ECO on the site. The final location of the contractor's camp will be authorized by the ECO and landowner.	Developer / Contractor	Construction phase

Performance indicator	ECO in conjunction with the landowner will approve construction
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	camp area.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C5: WASTE MANAGEMENT

Project Component/s	Development site.
Potential Impact	General construction waste will be generated during the construction phase. Poor waste management practices on site may lead to dumping and windblown litter creating a negative visual impact and nuisance for adjacent landowners / users as well as impacting the natural environment.
Activities/Risk Sources	<ul style="list-style-type: none"> • Dumping; • Windblown litter causing nuisance; • Pollution / degradation of the natural environment.
Mitigation: Target/Objective	<ul style="list-style-type: none"> • All waste generated, that is not recycled or re-used, on site shall be collected and disposed of at a registered landfill facility; • All safe disposal certificates and waste manifests from service providers to be kept and maintained; • All staff to receive training on correct waste management practices.

Mitigation: Action/Control	Responsibility	Timeframe
<ul style="list-style-type: none"> • A contractor appointed by the developer and engineer shall be tasked to ensure that waste management on site is conducted in accordance with NEMWA and applicable Regulations. • No on-site burying, dumping or stockpiling of any weeds and aliens or invasive species shall occur. Such should be removed from the site to a suitable dumping site from which seed cannot escape. • The disposal of waste should be considered as a last resort after having considered the re-use and recycling of waste during the construction phase. • Waste minimisation should be implemented, such as the avoidance, reduction, re-use and recycling of waste during construction, before considering the disposal of such waste. 	Contractor	Construction phase

Performance indicator	Waste management conducted in accordance with NEMWA and applicable Regulations. Adherence to the National Norms and Standards for the Storage of Waste in terms of Government Notice (GN) No. 926 of 29 November 2013.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C6: ARCHAEOLOGY AND PALAEOLOGY MANAGEMENT

Project Component/s	Development site.
Potential Impact	The loss of cultural or heritage resources.
Activities/Risk Sources	Destruction of cultural-historical features at the site will contribute to the loss of such features in the general area due to other non-related activities. This can at all times be mitigated to prevent/ minimise the loss of such features.
Mitigation: Target/Objective	To protect and mitigate the potential loss of cultural and heritage resources.

Mitigation: Action/Control	Responsibility	Timeframe
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) via the ECO. Heritage remains uncovered or disturbed during earthworks must not be disturbed until inspection and verified by the professional.	Contractor	Construction phase

Performance indicator	Protection of heritage resources.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C7: FIRES

Project Component/s	Development site; Laydown / contractors camp.
Potential Impact	Uncontrolled fire on/off site, resulting in damage to the environment, property, injuries/death to personnel on site, or injuries/death to the public.
Activities/Risk Sources	Activities associated with facility construction / contractors camp.
Mitigation: Target/Objective	To protect and mitigate the safety of people, property, and the environment on and off site.

Mitigation: Action/Control	Responsibility	Timeframe
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.	Contractor	Construction phase

Performance indicator	No fire occurred to damage the surrounding environment and land uses and management actions are in place should a fire occur.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C8: AN EFFECTIVE MONITORING SYSTEM TO DETECT ANY LEAKAGE OR SPILLAGE OF ALL HAZARDOUS SUBSTANCES DURING THEIR TRANSPORT, HANDLING USAGE AND STORAGE. THIS MUST INCLUDE PRECAUTIONARY MEASURES TO LIMIT THE POSSIBILITY OF OIL AND OTHER TOXIC LIQUIDS FROM ENTERING THE SOIL OR STORM WATER SYSTEMS

Project Component/s	Development site; Access roads.
Potential Impact	Contamination of soil, storm water and ground water resources by hazardous substances.
Activities/Risk Sources	The handling, storage and use of hazardous substances.
Mitigation: Target/Objective	Prevention and mitigation of the environment contaminated as a result of exposure to hazardous substances.

Mitigation: Action/Control	Responsibility	Timeframe
The EA holder, Land Owner, Site Environmental Officer and Environmental Control officer will do daily, weekly and monthly inspections and report and monitor compliance with the management actions included in the EMPr and EA conditions. These monitoring and reporting requirements are recorded in several sections of the EMPr. Monitoring will focus on signs of spillages and	Contractor	Construction phase

procedures during handling and storage of dangerous goods as described in the EMPr. The section on storage and handling of dangerous goods in the EMPr will be enforced.		
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Performance indicator	Impacts on hydrological features minimized and mitigated
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C9: DIESEL FUEL AND LUBRICANT HANDLING PROGRAMME

Project Component/s	Development site; Access roads.
Potential Impact	Contamination of soil, storm and ground water resources as a result of an oil/diesel/lubricant spill/leak.
Activities/Risk Sources	Activities associated with site construction; Activities associated with site operation.
Mitigation: Target/Objective	To protect and mitigate impacts of contaminants on the environment and hydrological features.

Mitigation: Action/Control	Responsibility	Timeframe
<p>Servicing of construction vehicles and machinery to take place of site. 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:</p> <p>The fuel tanks must be designed and installed in accordance with relevant Oil Industry standards and SANS codes where applicable for the aboveground storage tanks. The tanks must be located within a bund (110 % of the tanks capacity) in order to contain potential spills.</p> <p>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 ECO and recorded in the site register.</p> <p>All fuel and flammable liquids should be stored under secure and fenced conditions and in a bunded site with the volume of the bunding capable of holding 110% of the liquid.</p> <p>The applicant must ensure that effective stock inventory monitoring and regular auditing take place for the early identification of possible leaks.</p> <p>The requirements of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), must be adhered to. Within three months of the tanks ceasing to be used 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.</p> <p>Refuelling: Refuelling of equipment must be conducted from the bunded fuel tank and pump at the contractor's camp. Fuel tanks must be bunded and supplied with a concrete apron. The</p>	Contractor	Construction phase

<p>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.</p> <p>A 500 litre drawn trailer to convey diesel to the equipment for re-fuelling may also be used. Such trailer will be drawn by a specified vehicle and driver, with alternate nominated as approved by the Project Engineer. Such tow vehicle may travel at 20kms 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. In situ refuelling activity may only take place during a standard specified daily time slot as displayed in the construction office, unless specific per day permission has been given to refuel at any other time by the ECO. This must be pre-recorded in the site record book. Staff will require instruction in the identification of diesel and oil leaks and the use of Spillsolve (or equivalent) products.</p> <p>On-Site emergency repairs: Only small mobile plant and emergency repairs are to take place on site. These will require the provision of drip trays and funnels to ensure that no oil or fuel leakages occur onto the ground. Should such spill take place, then the oil saturated soil is to be placed in suitable containers and disposed of at a hazardous waste disposal site. Any contamination of soil is to be treated with Spillsolve or similar product. Contaminated water as a result of an oil or fuel spillage on the area should similarly be treated in appropriate way, and the polluted water should not be specifically removed and not allowed to merge with run-off water collected in the trap collecting all run offs from the slab.</p> <p>Collection of contaminated spares and waste oils: Contaminated spares, oil filters, gaskets, water, etc. will be collected in separate holders at the designated storage facility for disposal at a licensed H:h site. Staff will require instruction in:</p> <ul style="list-style-type: none"> • 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 		
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Performance indicator	Ensure that no spillages occur and if it does occur that it is handled and cleaned up accordingly.
Monitoring	This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.

OBJECTIVE C10: APPROPRIATE HANDLING AND STORAGE OF CHEMICALS, HAZARDOUS SUBSTANCES AND WASTE (WASTE MANAGEMENT PLAN)

The construction phase may involve the storage and handling of a variety of chemicals including adhesives, abrasives, oils and lubricants, paints and solvents. The main wastes expected to be

generated by the construction of the pipeline will include will include predominantly general solid waste in minimal amounts and potentially liquid waste, which may include hazardous waste.

Project Component/s	Access roads; Construction camp / Laydown area; Storage areas.
Potential Impact	<ul style="list-style-type: none"> • Release of contaminated water from contact with spilled chemicals. • Generation of contaminated wastes from used chemical containers. • Inefficient use of resources resulting in excessive waste generation. • Litter or contamination of the site or water through poor waste management practices. • Pollution of water and soil resources.
Activities/Risk Sources	<ul style="list-style-type: none"> • Vehicles associated with site preparation and earthworks. • Packaging and other construction wastes. • Hydrocarbon use and storage. • Spoil material from excavation, earthworks and site preparation.
Mitigation: Target/Objective	<ul style="list-style-type: none"> • To ensure that the storage and handling of chemicals and hydrocarbons on-site does not cause pollution to the environment or harm to persons. • To ensure that the storage and maintenance of machinery on-site does not cause pollution of the environment or harm to persons. • To comply with waste management guidelines. • To minimise production of waste. • To ensure appropriate waste storage and disposal. • To avoid environmental harm from waste disposal.

Mitigation: Action/Control	Responsibility	Timeframe
<ul style="list-style-type: none"> • Implement a site specific waste management plan during the construction phase. • Spill kits must be made available on-site for the clean-up of spills and leaks of contaminants. • Corrective action must be undertaken immediately if a complaint is received, or potential/actual leak or spill of polluting substance identified. This includes stopping the contaminant from further escaping, cleaning up the affected environment as much as practically possible and implementing preventive measures. • Implement an effective monitoring system to detect any leakage or spillage of all hazardous substances during their transportation, handling, use and storage. This must include precautionary measures to limit the possibility of oil and other toxic liquids from entering the soil or storm water systems. • Leakage of fuels must be avoided at all times and if spillage occurs, it must be remediated immediately. • In the event of a major spill or leak of contaminants, the relevant administering authority must be immediately notified as per the notification of emergencies/incidents. • Spilled cement, fly ash and concrete must be cleaned up as soon as possible and disposed of at a suitably licensed waste disposal site. • Any contaminated/polluted soil removed from the site must be disposed of at a licensed hazardous waste disposal facility. • All stored fuels to be maintained within a sealed bund and on a sealed surface. The bund must be at least 110% of the volume of the total containers. 	Contractor	Construction phase

- Adjacent fuelling areas situated around fuel tanks must be provided with an impervious layer or drip trays must be used during refuelling.
- Areas around fuel tanks must be appropriately bunded or contained in an appropriate manner as per the requirements of SABS 089:1999 Part 1.
- Fuel storage areas must be inspected regularly to ensure bund stability, integrity, and function.
- Oily water from bunds at the substations must be removed from site by licensed contractors.
- The storage of flammable and combustible liquids such as oils will be in designated areas which are appropriately bunded, and stored in compliance with MSDS files.
- Any storage and disposal permits/approvals which may be required must be obtained, and the conditions attached to such permits and approvals will be compiled with and copies kept on site in the environmental file.
- Transport of all hazardous substances must be in accordance with the relevant legislation and regulations.
- Construction sub-contractors must provide specific detailed waste management plans to deal with all waste streams.
- Specific areas must be designated on-site for the temporary management of various waste streams, i.e. general refuse, construction waste (wood and metal scrap) and contaminated waste as required. Location of such areas must seek to minimise the potential for impact on the surrounding environment, including prevention of contaminated runoff, seepage and vermin control.
- Where practically possible, construction and general wastes on-site must be reused or recycled. Bins and skips must be available on-site for collection, separation, and storage of waste streams (such as wood, metals, general refuse etc.).
- Disposal of waste must be in accordance with relevant legislative requirements, including the use of licensed contractors and disposal at appropriately licensed waste disposal sites.
- Hydrocarbon waste must be contained and stored in sealed containers within an appropriately bunded area.
- Waste and surplus dangerous goods must be kept to a minimum and must be transported by approved waste transporters to sites designated for their disposal and copies of the safe disposal slips must be kept in the environment file on site.
- Documentation (waste manifest) must be maintained detailing the quantity, nature, and fate of any regulated waste. Waste disposal records must be available for review at any time.
- An incident/complaints register must be established and maintained on-site.
- The sediment control and water quality structures used on-site must be monitored and maintained in a fully operational state at all times.

<ul style="list-style-type: none"> • An integrated waste management approach that is based on waste minimisation must be used and must incorporate reduction, recycling, re-use and disposal where appropriate • Upon the completion of construction, the area must be cleared of potentially polluting materials. • Dispose of all solid waste collected at an appropriately registered waste disposal site. Waste disposal shall be in accordance with all relevant legislation and under no circumstances may waste be burnt on site. • Where a registered waste site is not available close to the construction site, provide a method statement with regard to waste management. • The storage of waste must comply with the National Environmental Management: Waste Act, (Act No. 59 of 2008) National Norms and Standards for Storage of Waste, 2013. • The expansion of the dam must first be completed before the internal wall is removed in order to prevent spillage of urine and manure into the surrounding environment. The dam must be emptied before the two dams are connected. If it is not possible, the expanded dam must be constructed next to the existing one. The manure and urine are collected in a cement sump at each house. The sump has a flow level pump, which pump the urine and manure automatically to the waste storage dam. From the waste storage dam, the urine and manure are collected with a honeysuckle and irrigated onto the compost rows. The collection dam and sumps are inspected through the day on a daily bases. • During construction phase, the wetland should be demarcated as a no-go area, since no activities are proposed to occur within the wetland or 50m thereof, and also to ensure that no unauthorised activities would occur within the wetland. During excavation activities as part of the construction of the cattle housing units and the effluent control ponds, soils removed should be stockpiled outside of the 50m buffer setback area surrounding the wetland, for subsequent use as part of other construction activities (construction of embankments surrounding the ponds) or as part of rehabilitation activities. These materials should not be contaminated, and it should be ensured that the minimum surface area is taken up. For the duration of the construction period, these stockpiles should be covered with a suitable geotextile covering such as hessian sheeting, to limit possible sedimentation of the wetland. • As part of the construction of the effluent control dams, it is imperative that the clay layer be compacted to the required density to ensure that no contaminated effluent leaches through the ponds and potentially into the wetland. The embankments of the ponds should preferably be sloped to a minimum of 1:3 and revegetated with indigenous vegetation to ensure structural stability of the ponds, but also potentially increase the habitat diversity within the study area. 		
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Performance indicator	<ul style="list-style-type: none"> • Limited chemical spills outside of designated storage areas;
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	<ul style="list-style-type: none"> No water or soil contamination by spills; No complaints received regarding waste on site or indiscriminate dumping; Internal site audits ensuring that waste segregation, recycling and reuse is occurring appropriately; Provision of all appropriate waste manifests for all waste streams.
Monitoring	<ul style="list-style-type: none"> Observation and supervision of chemical storage and handling practices and vehicle maintenance throughout construction phase; A complaints register must be maintained, in which any complaints from the community will be logged; Observation and supervision of waste management practices throughout construction phase; Waste collection will be monitored on a regular basis; Waste documentation completed; A complaints register will be maintained, in which any complaints from the community will be logged; Complaints will be investigated and, if appropriate, acted upon; An incident reporting system will be used to record non-conformances to the EMPr; <p>This will be monitored by the ECO during site visits and recorded, reported and proof included in the audit report to be submitted once construction is completed.</p>

OBJECTIVE C11: EFFECTIVE MANAGEMENT OF CONCRETE BATCHING AREA

Project Component/s	Concrete batching area.
Potential Impact	<ul style="list-style-type: none"> Dust emissions. Release of contaminated water, pollution of ground water resources. Ground, soil pollution. Generation of contaminated wastes from used chemical containers. Inefficient use of resources resulting in excessive waste generation.
Activities/Risk Sources	<ul style="list-style-type: none"> Operation of the batching area. Packaging and other construction wastes. Hydrocarbon use and storage. Spoil material from excavation, earthworks and site preparation.
Mitigation: Target/Objective	To ensure that the operation of the batching area does not cause pollution to the environment or harm to persons.

Mitigation: Action/Control	Responsibility	Timeframe
<ul style="list-style-type: none"> Concrete batching areas to be sited such that impacts on the environment or the amenity of the local community from noise, odour or polluting emissions are minimised; Access and exit routes for heavy transport vehicles should be planned to minimise noise and dust impacts on the environment; The concrete batching area should demonstrate good maintenance practices, including regular sweeping to prevent dust build-up; The prevailing wind direction should be considered to ensure that bunkers and conveyors are sited in a sheltered position to minimise the effects of the wind; Aggregate material should be delivered in a damp condition, and water sprays or a dust suppression agent should be correctly applied to reduce dust emissions and reduce water usage; 	Contractor	Construction phase

<ul style="list-style-type: none"> • The site should be designed and constructed such that clean storm water, including roof runoff, is diverted away from contaminated areas and directed to the storm water discharge system; • Any liquids stored on site, including admixtures, fuels and lubricants, should be stored in accordance with applicable legislation; • Contaminated storm water and process wastewater should be captured and recycled where possible. A wastewater collection and recycling system should be designed to collect and filter contaminated water; • Process waste water and contaminated storm water collected from the entire site should be diverted to a settling pond, or series of ponds, such that the water can be reused in the concrete batching process. The settling pond or series of ponds should be lined with an impervious liner capable of containing all contaminants found within the water they are designed to collect; • Areas where spills of oils and chemicals may occur should be equipped with easily accessible spill control kits to assist in prompt and effective spill control; • Ensure that all practicable steps are taken to minimise the adverse effect that noise emissions. This responsibility includes not only the noise emitted from the plant and equipment but also associated noise sources, such as radios, loudspeakers and alarms; • Where possible, waste concrete should be used for construction purposes at the batching area or project site; • The batching area to be monitored by the ECO to ensure that the plant is operating according to its environmental objectives and within legislative requirements. 		
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Performance indicator	<ul style="list-style-type: none"> • No complaints regarding dust or contamination; • No water or soil contamination by chemical spills; • No complaints received regarding waste on site or indiscriminate dumping.
Monitoring	<p>Observation and supervision of chemical storage and handling practices and vehicle maintenance throughout construction phase. A complaints register will be maintained, in which any complaints from the community will be logged. Complaints will be investigated and, if appropriate, acted upon.</p> <p>A complaints register will be maintained, in which any complaints from the community will be logged. Complaints will be investigated and, if appropriate, acted upon.</p> <p>An incident reporting system will be used to record non-conformances to the EMPr.</p> <p>Developer or appointed ECO must monitor indicators listed above to ensure that they have been met for the construction phase.</p>

OBJECTIVE C12: DUST MANAGEMENT

Project Component/s	<p>General construction activities; Concrete batching area; Transport of materials to and from sites.</p>
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Potential Impact	Create a nuisance to property owners / users adjacent to the development.
Activities/Risk Sources	Windblown dust from stockpiles, excavated or cleared areas, and which vehicles may be entrained may affect property owners / users adjacent to the development.
Mitigation: Target/Objective	<ul style="list-style-type: none"> Dust suppression by wetting / covering stockpiles; Limit vehicle speeds for all vehicles.

Mitigation: Action/Control	Responsibility	Timeframe
<ul style="list-style-type: none"> Dust suppression by wetting / covering stockpiles; Limit vehicle speeds for all vehicles. Ensure compliance with the provisions as set out in the National Environmental Management: Air Quality Act (NEM: AQA), National Dust Control Regulations (Notice 827 of 2013). 	Contractor	Construction phase

Performance indicator	No complaints regarding dust.
Monitoring	<p>A complaints register will be maintained, in which any complaints from the community will be logged. Complaints will be investigated and, if appropriate, acted upon.</p> <p>A complaints register will be maintained, in which any complaints from the community will be logged. Complaints will be investigated and, if appropriate, acted upon.</p> <p>Developer or appointed ECO must monitor indicators listed above to ensure that they have been met for the construction phase.</p>

OBJECTIVE C13: NOISE CONTROL

Project Component/s	General construction activities; Concrete batching area; Transport of materials to and from sites.
Potential Impact	Create a nuisance to property owners / users adjacent to the development.
Activities/Risk Sources	Noise from construction vehicles and machinery during construction.
Mitigation: Target/Objective	Ensure construction vehicles and machinery operates in compliance with the Western Cape Noise Control Regulations (P.N. 200/2013).

Mitigation: Action/Control	Responsibility	Timeframe
<ul style="list-style-type: none"> Construction and deliveries may only be conducted during working hours as defined in C1 above. Ensure compliance with the provisions as set out in the Western Cape Noise Control Regulations (P.N. 200/2013). 	Contractor	Construction phase

Performance indicator	No complaints regarding dust.
Monitoring	<p>A complaints register will be maintained, in which any complaints from the community will be logged. Complaints will be investigated and, if appropriate, acted upon.</p> <p>A complaints register will be maintained, in which any complaints from the community will be logged. Complaints will be investigated and, if appropriate, acted upon.</p> <p>Developer or appointed ECO must monitor indicators listed above to ensure that they have been met for the construction phase.</p>

OPERATIONAL PHASE

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

Goals

Over-arching environmental goals for the management phase.

Objectives

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

Management Actions

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

Monitoring

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

Criteria/ Targets

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

Remedial Actions

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

Goals

The following are specified goals:

Goal 1: Storm water management

Goal 2: Waste Management

Goal 3: Noise

Goal 4: Flies

Goal 5: Trucks

Goal 6: Monitoring and Control

Goal 7: Safety Measures and Emergency Procedures

Goal 1: Storm Water Management

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
<p>Ensure effective storm water management on site.</p>	<p>Infrastructure failure, Pollution into the receiving environment, offensive odours and health risks.</p>	<ol style="list-style-type: none"> 1. Regular inspection and maintenance of storm water handling; 2. Infrastructure failure reported or identified to be fixed as a priority. 3. The manure and urine are collected in a cement sump at each house. The sump has a flow level pump, which pump the urine and manure automatically to the waste storage dam. From the waste storage dam, the urine and manure are collected with a honeysuckle and irrigated onto the compost rows. During the operational phase, the possibility of failure of the effluent control dams is a reality. Therefore, the failure of the ponds, whether it be through accidental spillage or seepage, is still considered of 'Moderate' risk 	<p>Internal audit of the facility to ensure compliance with relevant legislation. The collection dam and sumps are inspected through the day on a daily bases. Ground water monitoring will be conducted on a quarterly bases taking water samples from the borehole approximately 180m south east of the proposed cattle housing. This is in the flow path of all surface and ground water from the cattle housing site. Any signs of surface or ground water pollution will be detected using this bore hole as a monitoring point.</p>	<p>Storm water management plan in place and implemented.</p>	<ul style="list-style-type: none"> • If pollution is detected as a result of infrastructure failure immediate action 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 the type and extent of pollution that occurred specialists may be contacted to provide specific recommendations. • An incident report to be compiled and sent to the municipal and relevant governmental authorities. • In the event of a pollution event / incident the Municipality should inform and provide awareness to surrounding property owners / users.

		<p>significance mainly due to the deep sandy soils within the study area which would allow for effluent to enter the wetland. A leak would result in contamination of surface water and soil quality within the wetland thus, it is essential that all stormwater management infrastructure surrounding the cattle housing units and the effluent control dams are regularly inspected and maintained to prevent effluent from entering the wetland. Regular testing of the surface water within the wetland (if present) should occur to ensure that no seepage which would not be immediately detected, occurs and to implement an emergency spill plan in such cases.</p> <p>4. The treated effluent to be used for irrigation must</p>			
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		conform to the Department of Water and Sanitation's General Limits for Irrigation for Waste Water (GN no 1091 of September 2013).			
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Goal 2: Waste Management

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
Waste management practices on site are compliant in terms of relevant legislation.	Poor waste management can result in the following: Nuisance; Windblown litter; Pollution of the receiving environment.	The disposal of waste should be considered as a last resort after having considered the re-use and recycling of waste during the construction phase. Waste minimisation should be implemented, such as the avoidance, reduction, re-use and recycling of waste during operation, before considering the disposal of such waste. All recyclable waste to be composted. The composting area and waste storage area shall be operated in terms of the waste license.	Internal audit of the facility to ensure compliance in terms of relevant legislation. Adherence to the National Norms and Standards for the Storage of Waste in terms of Government Notice (GN) No. 926 of 29 November 2013, if the volumes of waste stored exceeds 80m ³ for hazardous waste and/or 100m ³ for general waste. <i>Waste Minimisation Guideline for Municipalities, 2015 (DEADP:WC).</i> The treated effluent to	On-site waste management procedure for non-recyclable waste for employees is in place and implemented.	<ul style="list-style-type: none"> • If pollution is detected as a result of infrastructure failure immediate action 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 the type and extent of pollution that occurred specialists may be contacted to provide specific recommendations. • An incident report to be compiled and sent to the municipal and relevant governmental authorities. • In the event of a pollution event / incident the Municipality should inform

		<p>Development and implementation of an on-site waste management plan.</p> <p>All other waste to be collected in sealed bins and removed to a licenced waste disposal facility weekly or as soon as the bins are full. Provide employees with sound waste management training.</p> <p>The manure and urine are collected in a cement sump at each house. The sump has a flow level pump, which pump the urine and manure automatically to the waste storage dam. From the waste storage dam, the urine and manure are collected with a honeysuckle and irrigated onto the compost rows. The collection dam and sumps are inspected through the day on a daily bases.</p>	<p>be used for irrigation must conform to the Department of Water and Sanitation's General Limits for Irrigation for Waste Water (GN no 1091 of September 2013).</p>		<p>and provide awareness to surrounding property owners / users.</p>
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Goal 3: Noise

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
Noise generated during the operation of the	Nuisance - A front loader and tractor	Ensure that noise generated by machinery used during the	Internal audit to ensure compliance with the	Manage and control noise to	<ul style="list-style-type: none"> • Opening of a complaints

facility.	on site will contribute to noise, but are all agricultural related implements that are associated with buffer areas.	general operation of the facility is in accordance with the Western Cape Noise Control Regulations (P.N. 200/2013).	Western Cape Noise Control Regulations (P.N. 200/2013).	be within the limits of the Western Cape Noise Control Regulations (P.N. 200/2013).	register and addressing and investigating reported complaints; <ul style="list-style-type: none"> Monitoring and recording of processes to ensure consistency.
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Goal 4: Flies

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
To mitigate and control the attraction of excessive flies as a result of the facility.	Nuisance Pests Health risks	<ul style="list-style-type: none"> All by-products are covered immediately on delivery which reduces the numbers of flies to a large extent. 	Will be monitored regularly. Problems experienced / complaints received will be recorded in a complaints register and addressed when required.	Problems experienced / complaints received and recorded in the complaints register must be addressed.	<ul style="list-style-type: none"> Opening of a complaints register and addressing and investigating reported complaints; Monitoring and recording of processes to ensure consistency.

Goal 5: Trucks

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
Dust Noise Obstruction of DR 1377	Nuisance	Existing access roads will be used. The existing access road is sufficient for the proposed expansion.	Will be monitored regularly. Problems experienced / complaints received will be recorded in a complaints register and addressed when required.	Problems experienced / complaints received and recorded in the complaints register must be addressed.	<ul style="list-style-type: none"> Opening of a complaints register and addressing and investigating reported complaints; Monitoring and recording of processes to ensure consistency.

Goal 6: Monitoring and Control

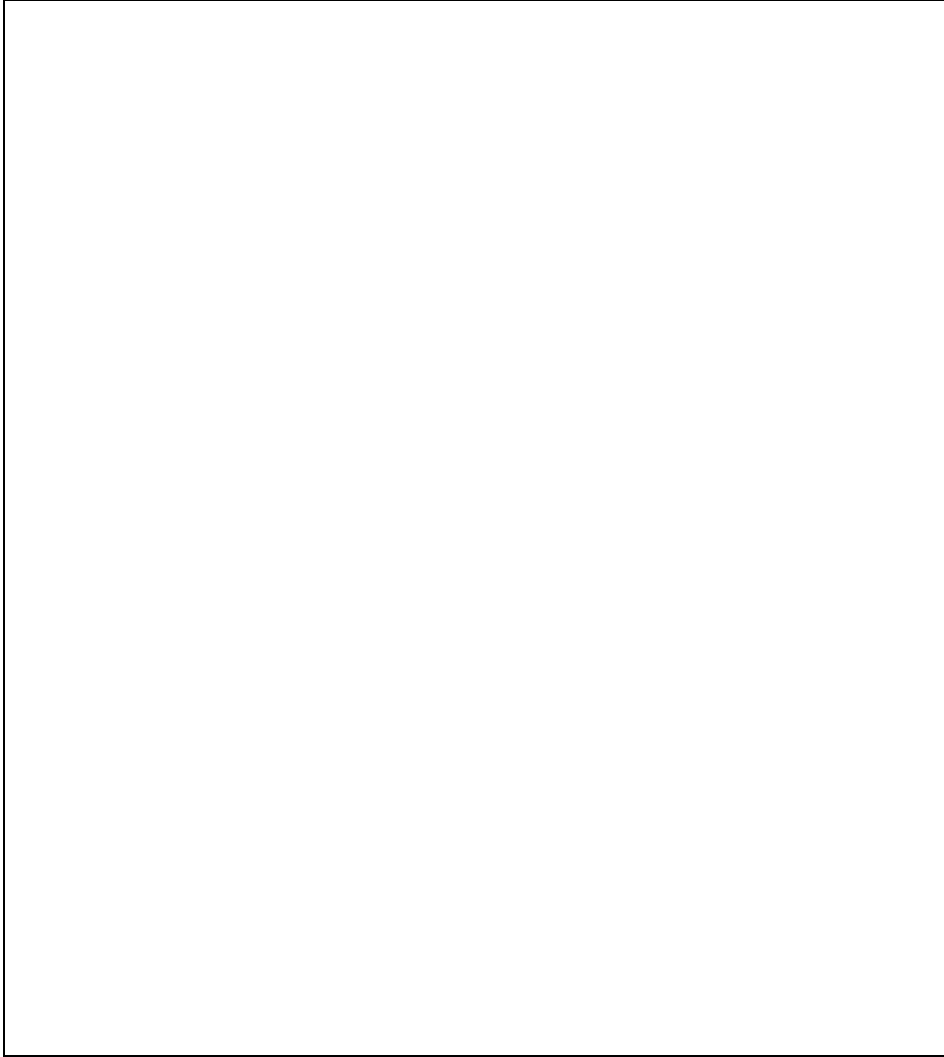
Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
Monitoring and control of processes at the	Nuisance Offensive odours	Ground water quality monitoring will be conducted	Will be monitored regularly. Problems	Problems experienced /	<ul style="list-style-type: none"> Opening of a complaints register and addressing

facility to ensure that activities do not cause negative impacts.	Pests Health risk	quarterly.	experienced / complaints received will be recorded in a complaints register and addressed when required.	complaints received and recorded in the complaints register must be addressed.	and investigating reported complaints; <ul style="list-style-type: none"> Monitoring and recording of processes to ensure consistency.
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Goal 7: Safety Measures and Emergency Procedures

Objectives	Risks	Actions	Monitoring	Criteria/Targets	Remedial Actions
Ensure that emergency protocol has been developed and is in place for the facility.	Fire; Disaster; Pollution; Death; Loss of Infrastructure.	Development and implementation of emergency procedures and plans to ensure the safety of employees, business.	Internal audit to ensure compliance with procedures and applicable legislation.	Procedures developed, implemented and regularly updated.	Development and implementation of Emergency Procedures in line with applicable legislation and standards.

SECTION 5: DRAWING/SKETCH



CHAPTER 9

DECOMMISSIONING PHASE

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

The decommissioning phase EMP provides specific guidance with respect to the management of the environmental risks associated with the decommissioning stage of a project.

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.

A decommissioning phase is where a structure is removed or otherwise modified to make it incapable for re-use for the original design purpose.

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 decommissioning phase as shown below.

Environmental monitoring during the decommission phase will include terrestrial flora rehabilitation monitoring.

CHAPTER 10

REHABILITATION SPECIFICATIONS AND SITE CLEAN-UP

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 must be cleared, and cleaned to the satisfaction of the developer.

Stabilisation and rehabilitation must take place immediately after construction operations have been completed. No vehicles or unauthorised personnel must be allowed onto areas that have been rehabilitated.

The areas impacted during construction must be stabilised and shaped according to the natural surrounding contours. If topsoil was removed during construction the topsoil must be used to stabilise the impacted areas.

If erosion occurred the ECO must be informed immediately who will then recommend erosion mitigation measures to be implemented.

Alien vegetation monitoring of the rehabilitated areas and surrounds must be conducted on an annual basis and if alien vegetation is detected the ECO must be informed immediately who will then recommend eradication methods.

CHAPTER 11

ENVIRONMENTAL AWARENESS INDUCTION COURSE MATERIAL

This section of the report is included in compliance with Section 24N (3) (c) of the National Environmental Management Act 107 of 1998.

WHAT IS THE ENVIRONMENT?

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



the oceans

• Air, plants, 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!



WASTE MANAGEMENT

- Waste minimization
- Reduce, reuse, recycle
- Separation at source



CHAPTER 12

COMPLIANCE WITH THE ENVIRONMENTAL AUTHORISATION

All conditions of the Environmental Authorisation must be adhered to onsite during the construction-, operational-, decommissioning- and rehabilitation phases of the proposed project. A copy of the Environmental Authorisation must be available on site together with the EMP and all contractors on site must sign the Declaration of Understanding as proof of awareness and understanding of all the conditions to be adhered to on site in terms of the EA and EMP.

CHAPTER 13

UPDATING/ADAPTING THE EMP

Although care has been taken to address all known relevant environmental issues for the development, it will become necessary to add or amend certain procedures or instructions to improve the efficiency of the EMP. Only those additions to, or amendments of, this EMP that will either improve environmental protection or can be proven not to have any negative effects would be considered to be included, and any amendments to the EMP must first be approved by the ECO and competent authority/ies i.e. DEA&DP.

REFERENCES

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

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