PRE-CONSTRUCTION, CONSTRUCTION, OPERATIONAL AND DECOMMISSIONING ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) FOR THE PROPOSED ZEERUST CHICKEN ABATTOIR

FINAL REPORT

PRE-CONSTRUCTION, CONSTRUCTION, OPERATIONAL AND DECOMMISSIONING ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

for

THE PROPOSED ZEERUST CHICKEN ABATTOIR

Prepared for:

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LIST OF ABREVIATIONS AND ACRONYMS

A ..... Lead Authority
C ..... Contractor
CE ..... Consulting Engineer
CLO ..... Contractor's Liaison Officer
CSIR ..... Centre for Scientific and Industrial Research
D ..... Developer
DEA ..... Department of Environmental Affairs
DWA ..... Department of Water Affairs
EA ..... Environmental Authorisation
EAP ..... Environmental Assessment Practitioner
ECO ..... Environmental Control Officer
ELO ..... Environmental Liaison
EM ..... Environmental Manager
EMPr ..... Environmental Management Programme
EER ..... Engineer's Environmental Representative
EO ..... Environmental Officer
ESO ..... Environmental Site Officer
HIA ..... Heritage Impact Assessment
HSO ..... Health and Safety Officer
I&AP ..... Interested and Affected Party
MSDS ..... Material Safety Data Sheet
NEMA ..... National Environmental Management Act, 1998 (Act 107 of 1998), as amended
NW-DEDECT ..... North West Department of Economic Development, Environment, Conservation and Tourism
OA ..... Other Authority
PM ..... Project Manager
RE ..... Resident Engineer
RMLM ..... Ramotshere Moiloa Local Municipality
SAHRA ..... South African Heritage Resource Agency
SEF ..... Strategic Environmental Focus
SHE ..... Safety, Health & Environment
TIR ..... Tree Identification Report
VIA ..... Visual Impact Assessment

GLOSSARY OF TERMS

Alien Invasive Species - Plants and animals which do not occur naturally in an area - they are brought in by humans. Alien plants often force indigenous species out of the area and are invasive due to a lack of natural enemies and favourable conditions.

Alternative - A possible course of action, in place of another, that would meet the same purpose and need defined by the development proposal. Alternatives considered in the EIA process can include location and/or routing alternatives, layout alternatives, process and/or design alternatives, scheduling alternatives or input alternatives. Plans or proposals for alternatives need to be approved by the ECO if part of the Record of Decision conditions (which may include the EMPr).

Aspect - Element of an organisation's activities, products or services that can interact with the environment.

Auditing - A systematic, documented, periodic and objective evaluation of how well the environmental management plan is being implemented and is performing with the aim of helping to safeguard the environment by: facilitating management control which would include meeting regulatory requirements. Results of the audit help the organisation to improve its environmental policies and management systems and mitigate environmental impacts.

Biodiversity - The rich variety of plants and animals that live in their own environment. Fynbos is a good example of rich biodiversity in the Cape.

Built environment - Physical surroundings created by human activity, e.g. buildings, houses, roads, bridges and harbours.

Conservation - Protecting, using and saving resources wisely, especially the biodiversity found in an area.

Construction Activity - Any action undertaken during the construction process by the Contractor, his Sub-contractors, suppliers or personnel or any entity acting on his behalf.

Construction camp - The area designated for all temporary site offices, lay-down areas, storage sheds and areas, parking areas, maintenance workshops, staff welfare facilities, accommodation, etc.

Contamination - The addition of foreign matter to a natural system, polluting or making something impure.

Contractor - Refers to the main organization or individual which have been appointed by the Developer, through the Project Manager, to undertake construction activities on the site.

Corrective (or remedial) action - Response required in order to address an environmental problem that is in conflict with the requirements of the EMPr. The need for corrective action may be determined through monitoring, audits or management review.

Deconstruction - Deconstruction involves taking a structure or building apart while carefully preserving valuable elements for re-use. Also see definition for demolition.

Degradation - The lowering of the condition of the environment through human activities, e.g. reducing the condition / integrity of a wetland environment due to siltation caused by upstream soil disturbance.

Demolition - Refers to the activity of the tearing-down buildings and other structures, thus the opposite of construction. Demolition contrasts with deconstruction.

Developer - The person or organisation responsible for building on land or for altering the use of land for a new purpose.

Ecology - The scientific study of the relationship between living things (animals, plants and humans) and their environment.

Ecosystem - The relationship and interaction between plants, animals and the non-living environment.

Environment - Our surroundings, including living and non-living elements, e.g. land, soil, plants, animals, air, water and humans. The environment also refers to our social and economic surroundings, and our effect on our surroundings.

Environmental Control Officer (ECO) - Relates to an independent appointment of a consultant by the Developer or Project Manager to objectively monitor implementation of relevant environmental legislation, conditions of Environmental Authorisations (EA's), and the EMPr for the project.

Environmental Impact Assessment (EIA) - An Environmental Impact Assessment (EIA) refers to the process of identifying, predicting and assessing the potential positive and negative social, economic and biophysical impacts of a proposed development.

Environmental Management Programme (EMPr) - The EMPr provides a description of the methods and procedures for mitigating and monitoring impacts associated with the project in order to ensure that activities are conducted and managed in an environmentally sound and responsible manner. The EMPr can also contain environmental objectives and targets which the project proponent or developer needs to achieve in order to reduce or eliminate negative impacts.

Environmental Management System (EMS) - Environmental Management Systems (EMS) provide guidance on how to manage the environmental impacts of activities, products and services. They detail the organisational structure, responsibilities, practices, procedures, processes and resources for environmental management. The ISO14001 EMS standard has been developed by the International Standards Organisation.

Environmental Officer - Appointment by the Consulting Engineer or Project Manager as their environmental representative on site. The EO is not independent but must rather act on behalf of the consulting engineer or project manager with the mandate to enforce compliance under the project contract, which must include the requirements of the EMPr.

Environmental policy - Statement of intent and principles in relation to overall environmental performance, providing a framework for the setting of objectives and targets.

Environmental Site Officer - An employee of the Contractor to act as his/her environmental representative to monitor, review and verify compliance with the EMPr by the contractor. This is not an independent appointment as the ESO must be a respected member of the contractor's management team.

Environmental specifications - Specifications, instructions and guidelines designed to help prevent, reduce and/or control the potential environmental implications as a result of the development and any associated activities.

Fynbos - Low-growing and evergreen vegetation found only in the south Western Cape. Fynbos is known for its rich biodiversity.

Habitat - The physical environment that is home to plants and animals in an area, and where they live, feed and reproduce.

Hazardous waste - Waste, even in small amounts, that can pollute, contaminate or cause damage to plants, animals, their habitat and the well-being of human beings, e.g. waste from factories, detergents, pesticides, hydrocarbons, paint containers, shutter oil, glaze, bitumen, glue containers, electronic waste etc.

Impact - A description of the potential effect or consequence of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space.

Indigenous species - Plants and animals that are usually located in a specific region as a result of only natural processes, with no human intervention.

Infrastructure - The network of facilities and services that are needed for economic activities, e.g. roads, electricity, water, sewerage.

Integrated - Mixing or combining all useful information and factors into a joint or unified whole. See Integrated Environmental Management.

Integrated Environmental Management (IEM) - A way of managing the environment by including environmental factors in all stages of development. This includes thinking about physical, social, cultural and economic factors and consulting with all the people affected by the proposed developments. Also called "IEM".

Land use - The use of land for human activities, e.g. residential, commercial, industrial use.

Lead Authority - The Lead Authority is the relevant environmental department (National or Provincial) who is responsible for issuing an Environmental Authorisation. This authority is responsible for ensuring that monitoring of the EMPr and other authorisation documentation is carried out.

Material Safety Data Sheet (MSDS) - Material Safety Data Sheet (MSDS) is a form with data regarding the properties of a particular substance. This document contains information on the potential health and environmental effects of the applicable substances as well as safe working procedures users should adhere to when handling the substance. Furthermore, the document details treatment measures to mitigate impacts on the environment in the event of spillages.

Method Statements - Method Statements are written submissions to the Engineer / Project Manager by the Contractor in collaboration with his/her ESO. The Method Statements must address the following for each applicable activity to be undertaken during the project:

- Materials and equipment to be used
- Getting the equipment to and from site
- How the equipment/material will be moved while on site
- How and where material will be stored
- The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or solid material that may occur
- Timing and location of activities
- Compliance/ non-compliance with the Specifications
- Any other information deemed necessary by the PM.

The Method Statements must contain the appropriate detail in order for the EO and Engineer / Project Manager to assess whether the Contractor's proposal is in accordance with the requirements of the EMPr. The contractor must sign each Method Statement along with the EO (or ECO on projects where no EO is present) and Engineer / Project Manager to formalise the approved Method Statement.

Mitigation - Measures designed to avoid, reduce or remedy adverse impacts on the environment due to construction activities.

Natural environment - Our physical surroundings, including plants and animals, when they are unspoiled by human activities.

Over-utilisation - Over-using resources - this affects their future use and the environment.

Policy - A set of aims, guidelines and procedures to help you make decisions and manage an organisation or structure. Policies are based on people's values and goals. See Integrated Metropolitan Environmental Policy.

Process - Development usually happens through a process - a number of planned steps or stages.

Proponent – Also known as the Developer. Entity which applies for environmental approval and is ultimately accountable for compliance to conditions stipulated in the Environmental authorisation (EA) and requirements of the EMPr.

Rehabilitation - Rehabilitation is the process of returning a disturbed area, feature or structure to a natural state meaning to the state that it was before disruption (where possible), or to an improved state.

Recycling - The practice of sorting and collecting waste materials for new use.

Resources - Parts of our natural environment that we use and protect, e.g. land, forests, water, wildlife, and minerals.

Solid waste - Any solid undesirable or superfluous by-product or remainder of any process or activity. This includes construction debris, chemical waste, cement/concrete remains, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. foodstuffs, clothing, packaging materials such as glass, paper and cardboard, plastics, and, in certain cases, ash).

Stakeholders - A subgroup of the public whose interests may be positively or negatively affected by a proposal or activity and/or who are concerned with a proposal or activity and its consequences. The term includes the proponent, authorities and all interested and affected parties.

Storm water management - Strategies implemented to control the surface flow of storm water such that erosion, sedimentation and pollution of surface and ground water resources in the immediate and surrounding environments are mitigated. This is specifically important during the construction and decommissioning phases of a project.

Sustainable development - Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Sustainability - The capacity to support, maintain or endure.

Visual impact - Changes to the visual character of available views resulting from the development that include: obstruction of existing views; removal of screening elements thereby exposing viewers to unsightly views; the introduction of new elements into the view shed experienced by visual receptors and intrusion of foreign elements into the view shed of landscape features thereby detracting from the visual amenity of the area.

Visual impact assessment - A specialist study to determine the visual effects of a proposed development on the surrounding environment. The primary goal of this specialist study is to identify potential risk sources resulting from the project that may impact on the visual environment of the study area, and to assess their significance. These impacts include landscape impacts and visual impacts.

Waste Management - Categorization, classifying, recycling, treatment and disposal of waste generated during construction and decommissioning activities.

Working area - Any area within the boundaries of the Site where active construction takes place including any working space.

Zoning - The control of land use by only allowing specific type development in fixed areas or zones

REFERENCES

DEA (1992) Integrated Environmental Management Guideline Series, Volumes 1-6, Department of Environmental Affairs, Pretoria.

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Lochner, P. 2005. Guideline for Environmental Management Plans. CSIR Report No ENV-S-C 2005-053 H. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town.

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SECTION 1: CONTEXTUAL INFORMATION

1.1 INTRODUCTION

Strategic Environmental Focus (Pty) Ltd (SEF) as independent environmental managers and impact assessors has been appointed by the Economic Creation for Development Centre (ECD) of the Council for Scientific and Industrial Research (CSIR), on behalf of the North West Department of Economic Development, Environment, Conservation and Tourism (NW-DEDECT), to compile and submit an Environmental Management Programme (EMPr) for the proposed construction and operation of the proposed Zeerust Chicken Abattoir to the decision making authority; the National Department of Environmental Affairs (DEA). Refer to figure 1 below for a locality map.

Figure 1: Locality Map (SEF, 2013)

This document represents the Environmental Management Programme (EMPr) compiled in support of the Environmental Authorisation (EA) application which is currently underway for the proposed Zeerust Abattoir. The EMPr incorporates the environmental mitigation/management measures associated with the pre-construction, construction and operational phases with the inclusion of those specific mitigation/management measures which arise from the Environmental Impact Assessment (EIA) process and specialist studies compiled in support of the EA application.

1.2 APPROACH

This document is compiled in accordance with the Integrated Environmental Management (IEM) philosophy which aims to achieve a desirable balance between conservation and development (DEAT, 1992). IEM is a key instrument of the National Environmental Management Act [NEMA] (Act No. 107 of 1998). NEMA promotes the integrated environmental management of activities that may have a significant effect on the environment, while IEM prescribes a methodology for ensuring that environmental management principles are fully integrated into all stages of the development process. It advocates the use of several environmental management tools that are appropriate for the various levels of decision-making. One such tool is an EMPr.

The IEM guidelines encourage a pro-active approach to sourcing, collating and presenting information in a manner that can be interpreted at all levels. The basic principles underpinning IEM are that there be:

- informed decision-making;
- accountability for information on which decisions are taken;
- accountability for decisions taken;
- a broad meaning given to the term environment (i.e. one that includes physical, biological, social, economic, cultural, historical and political components);
- an open, participatory approach in the planning of proposals;
- consultation with interested and affected parties;
- due consideration of alternative options;
- an attempt to mitigate negative impacts and enhance positive aspects of proposals;
- an attempt to ensure that the ‘social costs’ of development proposals (those borne by society, rather than the developers) be outweighed by the ‘social benefits’ (benefits to society as a results of the actions of the developers);
- democratic regard for individual rights and obligations;
- compliance with these principles during all stages of the planning, implementation and decommissioning of the proposals (i.e. from ‘cradle to grave’); and
- the opportunity for public and specialist input in the decision-making process.

These principles are in line with NEMA, which has repealed a number of the provisions of the Environment Conservation Act, 1989 [ECA] (Act No. 73 of 1989), and is focussed primarily on co-operative governance, public participation and sustainable development. The Environmental Impact Assessment Regulations 2006, which was replaced by the Environmental Impact Assessment Regulations 2010 that took effect in August 2010, regulate the procedures and criteria for the submission, processing, consideration and decision on applications for environmental authorisation of listed activities.

1.3 SCOPE

1.3.1 Legal Requirement of the EMPr

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Regulations, 2010, an Environmental Management Programme (EMPr) must accompany the environmental impact assessment report. The EMPr, which must comply with section 24N of the Act, must include all the information specified in Regulation 33 of the EIA Regulations, Regulations published as Government Notice (GN) No R. 543 in Government Gazette No 33306 of 18 June 2010 in terms of Chapter 5 of the National Environmental Management Act No 107 of 1998 (NEMA), and include -

a) Details of –
   (i) the person who prepared the EMPr; and
   (ii) the expertise of that person to prepare an EMPr;
b) Information on any management of mitigation measures that will be taken to address the environmental impacts that have been identified in a report contemplated by these Regulations, including environmental impacts or objectives in respect of –
   (i) Planning and design;
   (ii) Pre-construction and construction activities;
   (iii) Operation and undertaking of the activity;
   (iv) Rehabilitation of the environment; and
   (v) Closure, where relevant.
c) A detailed description of the aspects of the activity that are covered by the environmental management plan;
d) An identification of the persons who will be responsible for the implementation of the measures contemplated in paragraph (b);
e) Proposed mechanisms for monitoring compliance with the EMPr and reporting thereon;
f) As far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land-use which conforms to the generally accepted principle of sustainable development, including, where appropriate, concurrent or progressive rehabilitation measures;
g) A description of the manner in which it intends to -
   (i) Modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;
   (ii) Remedy the cause of pollution or degradation and migration of pollutants;
   (iii) Comply with any applicable provisions of the Act regarding closure, were applicable;
   (iv) Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;
h) Time periods within which the measures contemplated in the environmental management programme must be implemented;
i) The process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of undertaking a listed activity;
j) An Environmental Awareness Plan describing the manner in which -
   (i) The applicant intends to inform his or her employees of any environmental risk which may result from their work; and

(ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment; and

k) Where appropriate, closure plans, including closure objectives.

Provided in the sections that follow is the EMPr for the proposed development, based on the requirements of Regulation 33 of the EIA Regulations (GNR 543) as detailed above.

1.3.2 Site specific information

1.3.2.1 Proposed activity and local context

The project will entail the construction and operation of a chicken abattoir in the Zeerust industrial area, situated within the Ramotshere Moiloa Local Municipality (RMLM). The land designated by the RMLM for the establishment of the abattoir is located on Erf 1017/0 Zeerust JP (10 Collins Street), within the Zeerust Industrial District. The registered size of the plot is 5,710 m^2.

The project will include the physical construction of the abattoir including the installation of processing equipment. In addition, the project will entail the construction of the associated Waste Management Facility (to be constructed adjacent to the abattoir building), which will accommodate and treat waste generated by the abattoir. The proposed project includes the construction of the abattoir and the installation of processing equipment. The design of the waste water treatment facility will consist of activated sludge reactors, clarifiers and sludge drying beds.

The production intention is to slaughter 5 000 chickens a day. Production will be initiated at 20% output (1000 chickens) a day in year 1. This will be increased to 35% in year 2; 50% output in year 3; 75% output in year 4; and full capacity (100%) is envisioned to be reached by year 5.

1.3.2.2 Summary of anticipated impacts associated with the proposed activity

Table 1: Anticipated impacts associated with the proposed activity

ENVIRONMENTAL ASPECT	RELEVANT AREA	ENVIRONMENTAL OBJECTIVE	POTENTIAL IMPACTS
Soils and Erosion	Site	To prevent the loss of nutrient rich topsoil and minimise impact on soil profile; Effectively manage storm water; To prevent gulley erosion or significant erosion.	• Soil compaction and impacted soil profile; • Loss of nutrient rich topsoil; and • Soil erosion during construction and operational phases.
Hydrology	Site & Local Area	Prevent surface and water contamination; To maintain a suitable quality of surface- and ground water to be deposited into hydrological systems.	• Altered flow regimes as a result of hardened surfaces; • Disrupt natural drainage patterns; • Potential contamination of groundwater (due to aspects such as hydrocarbons and sewerage); and • Contaminants occurring as a result of construction (e.g. hydrocarbons and litter) might end up in the hydrological system.

ENVIRONMENTAL ASPECT	RELEVANT AREA	ENVIRONMENTAL OBJECTIVE	POTENTIAL IMPACTS
Terrestrial Ecology	Site & Local Area	To ensure that natural vegetation and habitat is not totally destroyed; To not interfere with fauna and faunal breeding activities.	• Loss of species of conservation importance, disruption of natural processes and functionality; and • Establishment of alien invasive plant species and declared weeds.
Heritage and Culture	Site	To ensure that all artefacts and symbols of culture and heritage significance are identified & preserved.	• Loss of significant symbols of heritage and culture.
Air pollution	Site & Local Area	To prevent the further pollution of the air in the area during the construction and operation phases of the development	• Increased airborne particulate matter and emissions due to construction activities; and improper rehabilitation procedure; • Increased dust generation during the construction phase; and • Impact of the odour from the abattoir operations.
Noise	Site & Local Area	To minimise the effect of noise on surrounding residents both during construction.	• Noise limits being exceeded. • Increased dust generation during the construction phase;
Visual impact	Site & Local Area	To minimise light and visual pollution; To ensure that the development blends in with the landscape character; To minimise unsightly views during the construction phase.	• Visual Impacts to surrounding land users with additional industry; and • Alteration of Landscape Character.
Socio-economic	Regional	To assure that the development is sustainable through employment, transfer of skills and training of local people.	• Job creation during the construction and operational phases of the proposed project; • Capacity building and skills transfer; • Conversion and diversification of land use; and • Social upliftment.
Safety & Security	Site & Local Area	To ensure safety within the site, particularly to prevent trespassers from neighbouring areas.	• Trespassers; and • Theft and vandalism during construction and operation

1.3.3 Interpretations

The implementation of the EMPr is not an additional or "add on" requirement. The EMPr is legally binding through NEMA and the relevant EA (once issued). The proponent is to ensure that through the project tender process the EMPr forms part of the Project Construction Contract Document to be incorporated in line with:

a) General project specifications; and

b) Relevant Standards, Guidelines and Publications (i.e. SANS 1200, SANS 2001, etc.), as applicable).

This document should further be implemented beyond the construction phase; and should form part of the day-to-day to management of the abattoir during the operational life of the facility.

1.3.4 Project phase

The EMPr provides a pro-active route by addressing potential problems before they occur. This should limit corrective measures required during the construction and operational phases of the development. In particular, this EMPr deals with the following phases as detailed below:

1.3.4.1 Planning and Design Phase

The EMPr offers an ideal opportunity to incorporate pro-active environmental management measures with the goal of attaining sustainable development. Pro-active environmental measures minimise the chance of impacts taking place during any construction phase, operational phase or decommissioning phase. There is still the chance of accidental impacts taking place; however, through the incorporation of contingency plans (e.g. mitigation measures described in this EMPr) during the planning and design phase, the necessary corrective action can be taken to further limit potential impacts.

1.3.4.2 Construction Phase

The bulk of the impacts during this phase will have immediate effect (e.g. noise and dust pollution). If the site is monitored on a continual basis during the construction phases, it is possible to identify these impacts as they occur. These impacts will then be mitigated through the contingency plans identified in the planning phase, together with a commitment to sound environmental management from the developer.

It is anticipated that site clearing and construction of the abattoir and associated waste water treatment works will take approximately 12-14 months.

1.3.4.3 Operational Phase

By taking pro-active measures during the operational phase, potential environmental impacts emanating during the operational phase will be minimised. In turn, this will minimise the risk and reduce the monitoring effort, but it does not make monitoring obsolete.

1.3.4.4 Decommissioning Phase

By taking pro-active measures during the decommissioning phase, potential environmental impacts emanating during the decommissioning (includes rehabilitation) phase will be minimized.

1.4 PRINCIPLES OF THIS EMPR

This EMPr is compiled using the following concepts and implementation requirements so that the higher principles of sustainable development are realised:

- Continuous improvement. The project proponent (or implementing organisation) must commit to review and to continually improve environmental management, with the objective of improving overall environmental performance.
- Broad level of commitment. A broad level of commitment is required from all levels of management as well as the workforce in order for the development and implementation of this EMPr to be successful and effective.

- Accountability. A strong sense of accountability should be maintained by the proponent, contractor and sub-contractor to prevent any party from distancing itself from commitments made to the EMPr.
- Flexible and responsive. The implementation of the EMPr must respond to new and changing circumstances, i.e. rapid short-term responses to problems or incidents. The EMPr is a dynamic "living" document and thus regular planned review and revision of the EMPr must be carried out.
- Integration across operations. This EMPr must integrate across existing line functions and operational units such as health, safety and environmental departments in a company/project. This is done to change the redundant mindset of seeing environmental management as a single domain unit.
- Legislation. It is understood that any development project during its construction phase is a dynamic activity within a dynamic environment. The Developer, Engineer, Contractor and Sub-contractor must therefore be aware that certain activities conducted during construction may require further licensing or environmental approval, e.g. river or stream diversions, bulk fuel storage, waste disposal, etc. The Contractor must consult the Engineer's Representative, Environmental Site Officer and/or ECO (as applicable) on a regular basis in this regard.

1.5 PURPOSE OF THE EMPR

This EMPr has been prepared to provide for the methods and procedures applicable to the mitigation of potential adverse environmental impacts associated with the proposed Zeerust Abattoir Development; and contain specific objectives and/or targets which provide the standards for monitoring and assessing the implementation thereof. EMPr's essentially provide for the link between the environmental impacts which were predicted; the associated mitigation measures specified during the assessment phase; and the effective implementation of the said mitigation measures (DEAT, 2004).

Specific objectives central to this EMPr are to:

- Provide for and define measures which arise from the EIA process, to ensure the effective management of unavoidable adverse environmental impacts associated with the project proposal;
- Provide and define a framework for the appropriate implementation of the relevant environmental management/mitigation measures specified in/during the EIA process;
- Provide and define the roles and responsibilities of various parties to ensure the effective implementation of the environmental management/mitigation measures specified; and
- Provide and define monitorable standards to ensure the effective assessment of compliance to/with the relevant environmental management/mitigation measures specified.

1.6 REVISION OF THE EMPR

The EMPr must be seen as a **"living"** document. As such, the EMPr and its associated environmental specifications may be amended subject to probable cause. Causes constituting the need for updating or amending of the EMPr may include:

- Amendments to the Environmental Authorisation;
- Instructions from the Lead Authority to do so;
- Significant change in applicable environmental legislation; and

- Significant changes to circumstances on site, subject to approval from the Lead Authority.

Although the EMPr is a living, functioning and dynamic document; no significant changes may be made without approval from the Lead Authority once it has been approved. The amendment process should be undertaken as specified in Regulation 46 of the EIA Regulations, Regulations published as Government Notice (GN) No R. 543 in Government Gazette No 33306 of 18 June 2010 in terms of Chapter 5 of the National Environmental Management Act No 107 of 1998 (NEMA)

SECTION 2: IMPLEMENTATION OF THE EMPR

2.1 ROLE PLAYERS AND RESPONSIBILITY MATRIX

In order for the EMPr to be successfully implemented, all the role players involved in the project need to co-operate. For this to happen, role players must:

- Clearly understand their roles and responsibilities in the project;
- Must be professional;
- Form respectful and transparent relationships; and
- Maintain open lines of communication.

Potential role players or project teams will include the Authorities (A), Other Authority (OA), Developer/Proponent (D), Consulting Engineers (CE), Engineers Representative (ER), Environmental Site Officer (ESO), Environmental Control Officer (ECO), Project Manager (PM), Contractors (C), Environmental Assessment Practitioner (EAP). Further; landowners, interested and affected parties and the relevant environmental and project specialists are also important role players.

Please refer to Table 2 below for a representation of the different roles and responsibilities as well as Figure 2 for recommended communication lines.

Table 2: Functions and Responsibilities of the Project Team

FUNCTION	ROLE	RESPONSIBILITIES
Authority (A)	Responsible for issuing of the relevant Environmental Authorisation (if applicable), overall environmental management within the province and ensuring compliance with all applicable environmental legislation and specifications (such as the EMPr and EA conditions). In this case the DEA.	The authorities are responsible for ensuring that the monitoring of the EMPr is carried out, this will be achieved by: • Conducting regular site visits; • Review Audit Reports submitted by the ECO; • Requesting and viewing Environmental Incident Report; • Requesting and viewing of Complaints Registers; and • Issuing directives, notices and/or fines for significant transgressions with the EMPr or environmental legislation.
Other Authority (OA)	Includes organisations and bodies like Municipalities, Heritage Resource Agencies, National Department of Water, etc. Other authorities are those that may be involved in the approval process of an EMPr or issuing and enforcing of relevant licenses / approvals.	• May be required to review EMPr's and provide comment to ensure the accuracy of the information relevant to their specific mandate. • May be involved in the development, review or implementation of an EMPr (e.g. if a specific development requires consent from a relevant authority, then that authority should review and comment on the content of the particular EMPr).

FUNCTION	ROLE	RESPONSIBILITIES
Developer/ Proponent (D/P) *(the Abattoir Owner will assume this role and responsibility for the Operational Phase)*	Proponent ultimately accountable for ensuring compliance to the EMPr and good management practice requirements for the duration of the project.	• Ensuring that the prospective Tenderers/Contractors adequately provide for the provisions of the EMPr in their submissions. • Appointing an independent ECO to objectively monitor implementation of relevant environmental legislation and requirements of the EMPr for the project. • Support and provide mandate to enable the ECO to perform responsibilities. • Ensuring that the ECO is integrated as part of the project team. • Establishing and maintaining proactive communications with the Contractor and ECO. • Undertaking periodic site visits and inspections to ensure that the environmental requirements are implemented. • Reviewing and commenting on environmental compliance assessments and/or reports. • Giving instructions on any procedures and corrective actions. • Ensuring that the EMPr is fully implemented and remains so, and when necessary is revised and updated. • Reviewing the Complaints Register. • Issuing fines, penalties or suspending work for contravention of the EMPr. • Giving instructions regarding corrective action to the Contractor.

FUNCTION	ROLE	RESPONSIBILITIES
Project Manager (PM)	The Project Manager has over-all responsibility for managing the project, contractors, and consultants and for ensuring that the environmental management requirements including any EMPr implementation, EMPr compliance and environmental related activities, issues and impacts are met.	• Understanding the EMPr and all its specifications and implications. • Ensuring that all aspects and specifications of the EMPr and approved Method Statements are implemented. • Enforcing the implementation of the EMPr and ensuring that Contractor and Subcontractor employees comply with the EMPr. • Reviewing and commenting on environmental compliance assessments and/or reports. • Monitoring environmental impacts and verifying that they are kept to a minimum at all times. • Approving all decisions regarding environmental procedures. Note that all decisions regarding environmental procedures must be approved by the PM. • Overseeing site works. • Taking action to address all EMPr, Method Statement and/or environmental legislation non compliances as well as keeping record of these actions. • Issuing penalties for contravention of the EMPr to Contractor and Sub-contractor (as deemed necessary). • Stopping any construction activity which is in contravention of the EMPr in accordance with an agreed warning procedure. • Recording and informing the CE and ECO of incidents or problems while implementing the EMPr as well as recommending ways of resolving these incidents or problems. • Reporting and recording all accidents and incidents resulting in injury, death or significant environmental liability immediately to the D/P and ECO. • Recording all public complaints received and immediately inform the D/P and ECO of these. • Ensuring that proper records are kept of all compliance status/feedback reports, incident reports and complaints register and that these documents are available for auditing by the PM, Authorities or ECO upon request. • Communicating the content of the ECO reports and any advice received from the ECO (verbally / in writing) to Contractor and Sub-contractors employees. • Designating the working areas and ensuring that these are managed (including sensitive environments) as per the approved construction site layout plan. • In cases where no formal PM has been appointed, the responsibility will fall on the D/P or his/her designated nominee.

FUNCTION	ROLE	RESPONSIBILITIES
Consulting Engineer (CE)	Contracted by the developer to design and specify the project engineering aspects. Generally the engineer runs the works contract. The CE may also fulfil the role of Project Manager on the proponent's behalf (See PM).	• Understanding the EMPr and all its specifications and implications. • Ensuring that the tendered Contractor fully comply with the EMPr and all its relevant specifications in the supplied Tender; • Making himself / herself, as well as any other identified key members, available for induction training on the EMPr by the ECO. • Notifying the Project Team and ECO of the proposed programme for works to be undertaken during the project and to fully disclose all details of the activities involved even when occurring off-site. • Ensuring that the EMPr specifications (of this document including any revisions, additions or amendments) are effectively implemented. • Assist the ECO in ensuring that the conditions of the EMPr are being adhered to and promptly issue instructions requested by the ECO, to the Contractor. All site instructions relating to environmental matters issued by the Engineer are to be copied to the ECO • Implementing on-site steps to mitigate environmental impacts. • Assist the ECO in making decisions and finding solutions to environmental problems that may arise during the construction phase; • Providing motivation and/or alternative specifications through Method Statement(s) for any deviation from or 'tailor making' of the EMPr for consideration. • Signing off on approved Method Statements. • Ensuring that all approved Method Statements are effectively implemented during undertaking of the relevant activity. • Order the removal of person(s) and/or equipment not complying with the environmental specifications. • Issue of penalties for transgressions of Environmental Specifications (if so delegated by the PM). • Provide input into the ECO's ongoing internal review of the EMPr. • Ensuring that all employees, contractors and sub-contractors employed comply with the requirements and provisions of the EMPr at all times. • Appointing competent, experienced and responsible individuals to administer and implement EMPr with regard to engineering and construction. • Reporting of any serious environmental incidents or impacts to the D/P, PM and ECO
Engineers Representative (ER)	Acting as the consulting engineer's representative on site and is on site on a daily basis.	• Understanding the EMPr and all its specifications and implications. • Overseeing site works. • Issuing site instructions / variation orders to the contractor, following request by the EO or ECO • May act as the liaison with the Contractor and ECO.

FUNCTION	ROLE	RESPONSIBILITIES
Contractor (C)	The principle contractor, known from hereon as the "Contractor" implements and complies with the requirements of the EMPr and relevant environmental legislation. The Contractor must ensure that all sub-contractors have a copy of and are fully aware of the content and requirements of this EMPr.	• Making him / her, as well as any employee deemed necessary, available for induction training on the requirements of the EMPr. • Familiarise himself/herself with all relevant sections and specifications of the EMPr as well as the approved Method Statements in order to gain a full understanding of the requirements. • Implementing all relevant EMPr sections, specifications and approved Method Statements. • Preparing and providing Environmental Method Statements (setting out in detail how the management actions contained in the EMPr will be implemented) as required by the EMPr and per the Developer's instructions. • The ESO will be responsible for conducting toolbox talks with employees for the duration of construction. • Being responsible for the employees of all Sub-contractors. • Reporting progress in terms of complying with the relevant sections of the latest EMPr version and approved Method Statements to the Developer/ECO as well as reasons for non-conformances. • Notify the Developer/ECO of any and all 'near misses', incidents, accidents and transgressions on site with respect to environmental management and non-compliance with the latest EMPr version and approved Method Statements and seek advice from the Developer/ECO for required corrective actions and/or site remediation. • Recording the date, nature and the corrective actions/remedial action taken in terms of all incidents in an incident report and submitting of these to the Developer/ECO for signing off. • Recording and reporting all complaints received to the Developer/ECO. • The contractor is required, where specified, to provide Method Statements setting out in detail how the management actions contained in the EMP will be implemented. • Liaise closely with the PM, ER and the ECO and ensure that the works on site are conducted in an environmentally sensitive manner; • Carry out instructions issued by the PM or Engineer required to fulfil his/her compliance with the EMP.

FUNCTION	ROLE	RESPONSIBILITIES
Environmental Site Officer (ESO)	The ESO is employed by the Contractor as his/her environmental representative to monitor, review and verify compliance with the EMPr by the contractor.	• Making him / her available for induction training on the requirements of the EMPr. • Assisting in preparing of Environmental Method Statements (setting out in detail how the management actions contained in the EMPr will be implemented) as required by the EMPr and per the PM's/ER's instructions. • Familiarise himself/herself with all relevant sections and specifications of the EMPr as well as the approved Method Statements in order to gain a full understanding of the requirements. • Implementing and ensuring compliance with all relevant EMPr sections, specifications and approved Method Statements. • Conducting an induction and an ad-hoc environmental awareness training session with all Contractor and Sub-contractors employees. • The ESO will be responsible for conducting environmental toolbox talks to employees for the duration of construction. • Being involved in all phases of the constriction (from site clearance to rehabilitation). • Conducting periodic inspections to monitor compliance with the EMP. • Providing monthly (or more often) feedback to the ECO on potential environmental problems associated with the development. • Assisting the Contractor in finding environmentally responsible solutions to problems. • Keeping accurate and detailed records of all activities, incidents and complaints on site. • Ensuring that the required actions are undertaken to mitigate the impacts resulting from non-compliance. • Reporting all incidences of non-compliance to the ECO and Contractor. • Responsible for the day-to-day environmental management on site.
	The developer/abattoir owner must appoint an ESO to assist with the day-to-day monitoring of the operation of the abattoir. The ELO for operation should ideally be a respected member of the operations management team at the abattoir e.g. Quality Manager or Safety Health and Environment Manager. Past experience has revealed that ESO for operations that can relate to the work force are the most effective for information transfer and ensuring compliance with the EMPr.	• Following an induction/training session by the ECO on the requirements of the EMPr, the ESO for operations will be responsible for the implementation of the EMPr. • Any issues raised by the ECO during operational audits if required, will be routed to the ESO for operation for the developer/abattoir owner's attention. • The ESO for operation must have a thorough understanding of the processes involved in the abattoir and must be permanently on site to ensure daily environmental compliance with the EMPr. • The ESO for operation does not need academic environmental training, but needs to be thoroughly conversant with the guidelines of the EMPr. • Conduct the necessary toolbox talks/awareness training with the workforce on the requirements of the EMPr.

FUNCTION	ROLE	RESPONSIBILITIES
Abattoir Employees (AE)	Employees are responsible for ensuring that the EMPr is implemented during the operational phase in accordance with the requirements of the EMPr. However should they fail, the abattoir owners retain the ultimate responsibility.	• Making him / her available for induction training on the requirements of the EMPr. • Familiarise himself/herself with all relevant sections and specifications of the EMPr as well as the approved Method Statements/Standard Operating Procedures in order to gain a full understanding of the requirements. • Implementing all relevant EMPr sections, specifications and approved Method Statements/Standard Operating Procedures. • Undergoing regular toolbox talks/awareness training. • Notify the owners of the abattoir of any and all 'near misses', incidents, accidents and transgressions on site with respect to environmental management and non-compliance with the latest EMPr version. • Employees incur personal liability for violations of laws listed in Schedule 3 to the National Environmental Management Act of 1998, unless they can show that the offence occurred as a result of the employer's failure to take reasonable measures to prevent the violation. Therefore, any complaints must by logged in the Complaints Register (See Annexure 6)

FUNCTION	ROLE	RESPONSIBILITIES
Environmental Control Officer (ECO)	An independent appointment as an advisory consultancy, monitoring and reporting role to objectively monitor implementation of relevant environmental legislation, conditions of Environmental Authorisations (EA's), and the EMPr for the project. Updating of the EMPr and making recommendations for addressing EMPr and/or environmental legal non-compliances. Liaising with the relevant Environmental Authorities on environmental issues and confirming their requirements, as well as communicating such requirements to the Developer, Consulting Engineer and/or PM The ECO must be suitably experienced with the relevant environmental management qualifications and preferably competent in construction related methods and practices.	• Being pro-active throughout the project which includes access to specialist expertise (botanists, ecologists, etc.) as and when required. • Advising the CE, PM and Developer on any necessary environmental authorisations and permits that would be needed to be applied for. • Revising and updating the EMPr as and when necessary and submit such updates to the CE, PM and Lead Authority for review. • Submitting copies of revised EMPr to all relevant stakeholders for their information and review. • Where no EO/EM is appointed, the ECO must convey the contents of this EMPr to the Contractor site team and discuss the contents in detail with the CE, Contractor, PM and possibly sub-contractors, including any employee member they deem necessary, prior to them starting any work on site (once-off). • Keeping record of everyone who attended the EMPr introduction training course. • Handling and addressing of information received from whistle blowers as confidential and reporting these incidences to the relevant Authority as soon as possible • Maintaining a photographic record of the site prior, during and after construction activities is undertaken. • Conducting audits on compliance to relevant environmental legislation, conditions of EA, and the EMPr for the project at a frequency as determined by the Lead Authority. • Monitoring that environmental impacts are kept to a minimum. • Immediately reporting any serious environmental incidents or impacts to the PM and/or CE. • Preparing of monitoring/audit reports which reflect the EMPr compliance status, findings, issues and recommendations for addressing non-compliances and submitting these to the project team and Lead Authorities. • Keeping record of EMPr audits, monitoring and incidents. • Reviewing and commenting on all Environmental Method Statements and making recommendations to the CE or ER on whether or not to accept the Method Statement and/or if any amendments or revisions is required. • Making recommendations on any additional Method Statements that may be required as construction activities progress.
Environmental Assessment Practitioner (EAP)	Appointment by the Developer to handle all applications for Environmental Authorisations and conducting of specialist studies as required by the Lead Authority.	The definition of an environmental assessment practitioner in Section 1 of NEMA is "*the individual responsible for the planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management plans or any other appropriate environmental instruments introduced through regulations".*

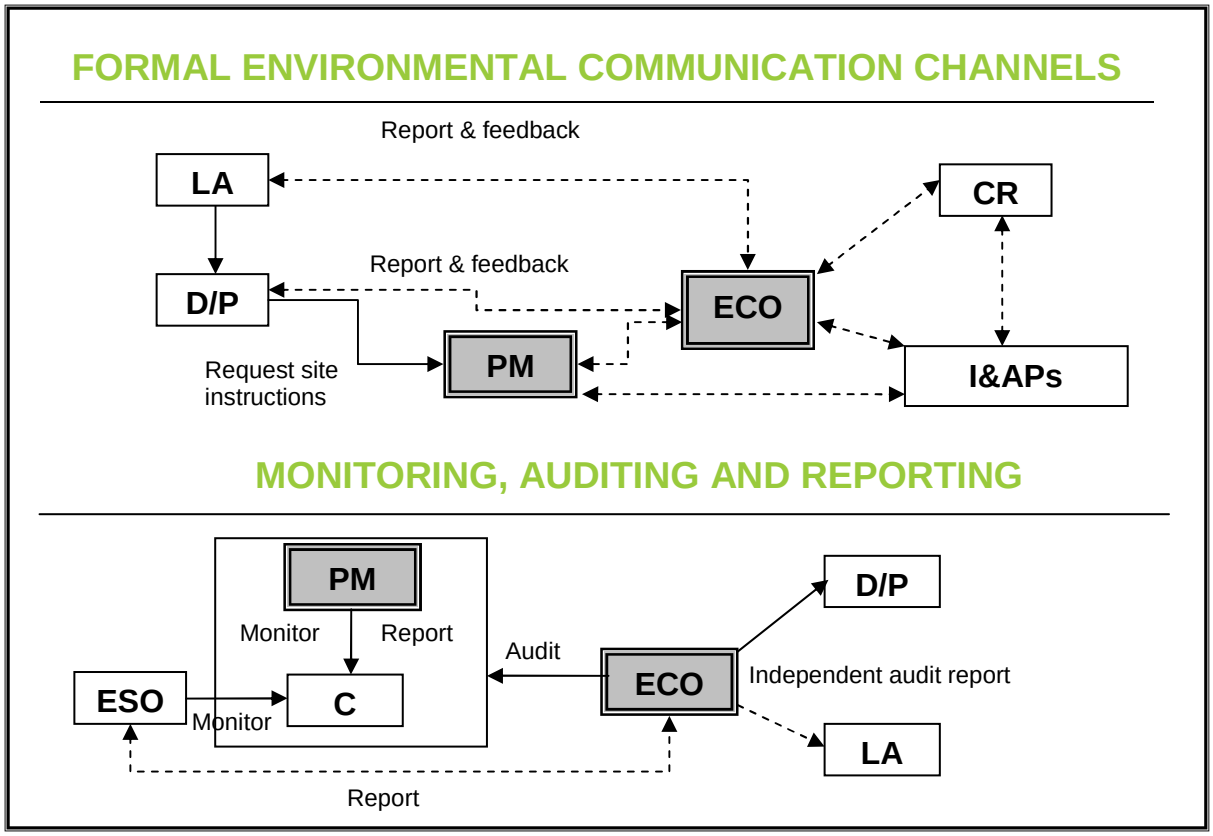

Figure 2: Recommended lines of communication, reporting and monitoring

2.2 AWARENESS TRAINING

This EMPr is drafted in accordance to the principles of the National Environmental Management Act (No. 107 of 1998) [NEMA], as amended; which constitute that development must be sustainable. Sustainable development is planned to meet the needs of present and future generations, e.g. the need for basic environmental, social and economic services. Sustainable development includes using and maintaining resources responsibly.

Under Section 28 of NEMA (Duty of Care) provision is made that anyone who causes or is likely to cause pollution or degradation of the environment; is responsible for preventing impacts occurring, continuing or recurring as well as for the costs of repair to the environment.

One tool to make provision for sustainable development is the awareness making of the workforce on the requirements and commitments of the EMPr and conditions of the EA. The ESO, or ECO on small projects where an ESO is not appointed, are responsible for ensuring everyone on site is given an environmental awareness induction session, prior to commencement of construction, which not only clearly defines what the environment is and gives specifics detailing the local environment but outlines the requirements of the EMPr as a management tool to protect the environment.

Refresher courses must be conducted as and when required. The ESO must ensure periodic environmental toolbox talks include alerting the workforce to particular environmental concerns associated with the tasks for that day or the area/habitat in which they are working. Additional media

such as awareness posters and hand outs must be considered to create awareness throughout the site.

2.3 CONTRACTOR ENVIRONMENTAL METHOD STATEMENTS

Method Statements are written submissions to the Engineer/PM by the Contractor in collaboration with his/her ESO, in response to a request by the ECO/PM and or Engineer. The Method Statements set out the plant, materials, labour and method that the contractor proposes using to carry out an activity, identified by the ECO/PM and/or Engineer. The Method Statements contain the appropriate detail such that the ECO/PM and Engineer are able to assess whether the Contractor's proposal is in accordance with the requirements of the EMPr. The contractor must sign each Method Statement along with the ECO/PM and Engineer to formalise an approved Method Statement.

All Method Statements, including those which may be required as *ad hoc* or emergency construction method statements, must be submitted to the Engineer/PM/ECO for approval prior to the commencement of the activity. Any changes to the method of works must be reflected by amendments to the original approved Method Statement. Any changes in this regard must be approved by the ECO/PM/Engineer on the understanding that such changes are environmentally acceptable and in line with the requirements of this EMPr.

The *pro forma* Method Statements for the following activities listed below must be submitted to the ECO/PM and/or Engineer for approval before construction commences (Refer to Annexure 4A and 4Bfor an example and a template which may be used). These include *inter alia*:

- Solid waste management;
- Hazardous waste management;
- Storage of Hazardous Materials and Chemicals;
- Crew camps and construction lay down areas;
- Workshop and maintenance/cleaning of plant;
- Cement and concrete batching;
- Dust control;
- Traffic control;
- Hydrocarbon and emergency spills procedures;
- Diesel tanks and refuelling procedures;
- Sourcing, excavating, transporting and dumping of fill and spoil material;
- Topsoil management;
- Fire;
- Conservation of Heritage Resources; and
- Rehabilitation of crew camp and other disturbed areas.

2.4 ENVIRONMENTAL INCIDENTS AND COMPLAINTS REGISTER

All environmental incidents occurring on the site must be recorded by the contractor in an Environmental Incident Register (Refer to Annexure 5 for a sample) kept on site. Recording of incidents will assist in identifying trends and determining the root cause of aspects, ensuring that overall environmental management on site improves. Incidents must be submitted to the PM/Engineer and the ECO must be copied in this. The following information must be documented:

- Time, date, location and nature of the incident;
- Corrective actions taken and by whom;
- Comments on the cause of the incident; and
- Signature.

The PM/ER in conjunction with the ECO will identify and approve remediation actions where necessary.

The Contractor must further also record any complaints (pertaining to environmental aspects) received from the affected parties (community, workforce, adjacent landowners, etc.) in a complaints register kept on-site (Refer to Annexure 6 for a sample). The lodged complaint must be brought to the attention of the PM/Engineer and the ECO must be copied in this. The PM/Engineer in consultation with/through the CR will respond accordingly. The following information will be recorded:

- Time and date of the complaint;
- Name and contact details of the lodger of complaint;
- Location and nature of the complaint;
- Corrective actions taken and by whom; and
- Signature.

An investigation must ensue and a response to the complainant must be provided within **seven working days**.

2.5 EMERGENCY PROCEDURES

The Contractor in consultation with the principle agent and design team must prepare emergency procedures in line with the Contractor's construction methodology and the design specifications that can be implemented immediately in the event of an emergency. Responsible staff must be trained in carry out these procedures and have access to the materials, equipment and appropriate personal protective equipment. The following emergency procedures should be addressed by the contractor as a minimum requirement:

- Use of hazardous substances and materials;
- Hydrocarbon and emergency spills;
- Contamination of water resources from spills;
- Contamination of soils from spills;
- Accidents to employees; and
- Fires.

The procedures need to include:

- Names of key emergency response personnel;
- Personnel responsibilities and contact details (including all-hours numbers);
- Contact details for emergency services;
- The location of on-site information on hazardous materials, including MSDS and spill containment material;
- Procedure to follow to minimise damage and control the emergency; and
- Instructions and contact details for notifying the Site Manager, principle agent, local council, and nearby residents if necessary.

2.6 SITE DOCUMENTATION

The following is list of documentation that must be held on site and must be made available to the ECO and/or Approving Authority on request.

- Access negotiations and physical access plan;
- Way leaves, letters of agreements, etc.;
- Incident reports and/or Environmental Incident Registers;
- Records of all remediation / rehabilitation activities;
- Copies of ECO reports (external management and monitoring);
- Copies of ESO reports (internal management and monitoring);
- A copy of Environmental Management Programme (EMPr);
- Complaints register;
- Awareness training material (toolbox talks, inductions, etc.);
- Service receipts and/or a Waste manifest; and
- Environmental Method statements.

2.7 PRO FORMA DOCUMENTATION

2.7.1 Prior to the commencement of construction activities

The following attached *pro forma* documentation (Refer to Annexure 1 – 4B) is to be filled out and is binding to the EMPr and project contract and includes *inter alia*:

- Declaration of understanding by the Developer;
- Declaration of understanding by the Engineer;
- Declaration of understanding by the Contractor;
- Environmental Method statements; and
- ECO / Engineer approval for method statements.

2.7.2 During construction activities

The following documentation is to be maintained once filled out during the project period. These are binding to the EMPr and project contract. They include inter alia:

- Amended Environmental Method Statements;
- ECO / Engineer approval for amended method statements;
- Environmental incidents; and
- Records of all remediation / rehabilitation activities.

SECTION 3: MANAGEMENT OF ASPECTS

3.1 PREAMBLE

The point of departure for this EMPr is to ensure a **pro-active rather than re-active** approach to environmental performance; by addressing potential problems before they occur. This will limit corrective measures needed during the construction phase of the project. Therefore, the purpose of an EMPr is to provide management measures that must be implemented by Developers, Engineers and Contractors alike to ensure that the potential impacts of a proposed development are minimised. It must also be ensured that the EMPr is maintained and upheld as a dynamic document in order for the project team to add or improve on issues that might be considered left out or not relevant to the project. In such instances, the ECO may make such changes subject to authorisation by the approving authority (See Section 1.6).

The following tables (see page 24-77) form the core mitigation measures appropriate to the **pre-construction, construction, operational** and **decommissioning phases**. The tables present the objectives to be achieved and the management actions that need to be implemented in order to mitigate the negative impacts and enhance the benefits of the project. Associated responsibilities, criteria/targets and required frequencies are clearly specified.

The **"pre-construction"** section of this EMPr, refers to the period of time leading up to and prior to the commencement of construction activities; and has been grouped under "general planning". This is to ensure pro-active environmental management measures with the goal of identifying avoidable environmental damage at the outset and sustain optimal environmental performance throughout the construction phase. Most impacts will occur during the construction phase and must be mitigated through the contingency plans identified during the pre-construction phase.

The **"construction"** section refers to all construction and its operation-related activities that will occur within the approved areas and access roads, until the project is completed. The "construction" section has been divided into three functional areas, namely "materials"; "plant and employees"; and "actual construction activities". Each of these functional areas within the EMPr contains specific mitigation requirements and requested contractor environmental method statements where required.

The bulk of environmental impacts will have immediate effect during the **"construction"** phase (e.g. noise, dust, and destruction of vegetation). If the site is monitored on a continual basis during the construction phase, it is possible to identify these impacts prior to, or as they occur. These impacts will then be mitigated through the measures outlined in this section, together with a commitment to sound environmental management from the project team.

The **"operational"** section of this EMPr refers to undertaking of operational activities for commercial purposes once construction has been complete. This EMPr addresses those aspects that could be predicted to occur during the Operational Phase and has been divided into functional sections namely: "General"; "Holding Area"; "Processing (Drity & Clean)"; and "Storage and Transport of Waste".

Should it be deemed that the aspects and associated mitigation measures are not sufficient, it is strongly advised that a dedicated Operational EMPr is generated closer to the operational phase

when a greater understanding of anticipated impacts, activities and management functions are available.

The **"decommissioning"** section of the EMPr refers to closure of the development as well as the required rehabilitation. This phase is however not anticipated to take place but has nonetheless been provided for.

3.2 STRUCTURE AND CONTENTS OF TABLES

The table consists of seven parts as follows:

"Phase of development" - This row will identify either pre-construction (planning) or actual construction phase.

"Impact / issue" - This row will identify the issue being addressed, e.g. Materials, site demarcation, heritage, etc.

"Control/Mitigation Measure" - This column will include all the necessary mitigation measures for each impact/issue'.

"Management objectives" - This column will indicate what the management objectives to be achieved for each mitigation measure are.

"Measurable targets" - This column will indicate what evidence is to be used as an indication to whether or not the 'Management objectives' have been implemented and hence achieved.

"Frequency of action" - These columns provide time guidelines for the 'Responsible party' by which he/she is to action or manage the required mitigation.

"Responsible person" – The party or persons anticipated to be responsible for ensuring and verifying that the prescribed mitigation measures have been implemented.

3.3 SPECIALIST RECOMMENDATIONS

Specialist recommendations have been included the Core Mitigation Tables to follow. The following specialist studies, as reflected below, were undertaken for the proposed development:

3.3.1 Ecological Assessment

The study area is situated within the Savanna Biome which is the largest Biome in southern Africa and is characterised by a grassy ground layer and a distinct upper layer of woody plants. The Savanna Biome is divided into smaller units known as vegetation types, of which the study area occurs within a single vegetation type, namely Zeerust Thornveld. Further, according to the North West Province Biodiversity Conservation Assessment for the Ramotshere Moiloa Local Municipality, the study area is located within a category 1 Terrestrial Critical Biodiversity Area (CBA). These CBA's are areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems.

The study area was found to be very small with only two vegetation structures discernable, namely rocky areas and disturbed woodland. Although the study area was located within an industrial area, it was dominated by indigenous vegetation with at least one plant species of conservation concern present, namely *Crinum macowanii*, as well as two provincially protected species recorded, namely *Aloe zebrina* and a *Gladiolus sp.*.

In addition, very low faunal activity was recorded during the survey which could be attributed to the small size of the study area as well as the constant human presence. Despite this, one avifaunal species of conservation concern, *Coracias garrulous* (European Roller) which is currently listed as Near Threatened, was given a high probability of occurring in the study area based on the presence of suitable habitat.

The vegetation recorded within the study area was not considered pristine, with disturbances such as solid waste (rubbish), alien plant infestations and human activity currently impacting on the biodiversity. Despite this, vegetation recorded within the study area was indigenous and representative of the Zeerust Thornveld vegetation type, and the presence of one plant species of conservation concern and two provincially protected species within the study area resulted in the area being classified medium ecological sensitivity and conservation importance.

3.3.2 Phase I Heritage Impact Assessment

The study area is located in the vicinity of an existing abattoir and in an area already disturbed and developed from an industrial and commercial point of view to a large degree. A fairly small area of an open plot within this developed zone has been earmarked for development purposes.

This report is the result of the 2014 Heritage Impact Assessment. No sites, features or objects of any cultural (archaeological or historical) origin or significance were found during the assessment of the area. Background research did however indicate the presence of cultural heritage sites in the larger area in and close to Zeerust.

However, the subterranean presence of archaeological or historical sites, features or objects is always a possibility. This could include unknown and unmarked burial pits. Should any be uncovered during the development process a heritage specialist should be called in to investigate and recommend on the best way forward.

3.3.3 Social Impact Assessment

Based on the impacts identified and the measures that could possibly be implemented to mitigate (or enhance) these impacts, no fatal flaws were identified. A review of the current living conditions within the area found that the lack of municipal services to the area is a concern. The proponent should ensure that their presence in the community contribute to the development of the area by providing assistance in terms of the maintenance of roads, assisting with refuse removal to a registered landfill site, etc.

Odour has been raised as a major concern and the applicant should engage with the specialist in the field of curbing and managing odours or by implementing specific technologies to address these concerns. An odour management plan should be developed and implemented and regular monitoring should take place, including feedback from surrounding land users.

The recommendations are listed as part of the mitigation measures of each impact identified, and should therefore be read in conjunction with Section 6 of the report. Should all the mitigation measures, as highlighted in the report be employed, it is recommended that the project may proceed.

Table 3: Management Table and Mitigation Measures for the Pre-Construction (Planning and Design) Phase of the Development

PHASE OF DEVELOPMENT	PRE-CONSTRUCTION
IMPACT / ISSUE	GENERAL PLANNING
SECTION	A

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
A1 PROJECT CONTRACT AND PROGRAMME				
i. Construction of new premises must not commence before the plans of the premises and associated specifications have been approved. Compliance should be ensured to the infrastructure requirements imposed by regulation R 3505 of the Meat Safety Act 40 of 2000 and regulation R 2378 of the National Building Regulations and Building Standards Act 103 of 1977, as amended. In the case of new premises, land use change/rezoning must be approved in advance. ii. Any new services system must be designed according to the minimum requirements of the Local Municipality, relevant by-laws and DWA's minimum requirements. iii. The EMPr must be included as part of the tender documentation thereby making it part of the enquiry document to make the recommendations and constraints, as set out in this document, enforceable under the general conditions of contract. iv. The developer/abattoir owner must provide all contractors with a copy of the EMPr. v. A copy of this EMPr must be available on site. The Contractor must ensure that all the personnel on site, sub-contractors and their team, suppliers, etc. are familiar with and understand the specifications contained in the EMPr.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase • Ensure environmental awareness and formalise environmental responsibilities and implementation	• Contract records • Signed declaration pro forma's	• Once-off, prior to construction during planning	• Developer/ Abattoir Owner • Contractors
A2 APPOINTMENTS AND DUTIES OF PROJECT TEAM				
i. The Developer/abattoir owner must appoint an independent Environmental Control Officer (ECO) who must monitor the contractor's compliance with the EMPr. ii. The contact details for the ECO must be completed on the attached pro-forma and a copy kept on site. This document must be made available to the approving authority on request. iii. The developer/abattoir owner must appoint an Environmental Site Officer (ESO) for Construction. This person will be required to monitor the situation with a direct hands-on approach, and ensure compliance and co-operation of all personnel. He must be fluent in the languages of the employees.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase	• Contract records • Signed declaration pro forma's	• Prior to construction during planning	• Developer/ Abattoir Owner • Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
A2 APPOINTMENTS AND DUTIES OF PROJECT TEAM (CONTINUED)				
iv. Before construction activities commence, role players must have a clear indication of to their role in the implementation of this EMPr as indicated in Section 2.1, Table 1. v. Subcontractor(s) contracts with the principle contractor must contain a clause to the effect that the disposal of all construction-generated refuse / waste to an officially approved dumping site is the responsibility of the subcontractor in question and that the subcontractors are bound to the management activities stipulated in this EMPr. vi. The "declarations of understanding" on the EMPr (Annexure 1 – 3) must be signed prior to the commencement of construction. Signed declarations of understanding must form part of site documentation.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase	• Contract records • Signed declaration pro forma's	• Prior to construction during planning	• Developer/ Abattoir Owner • Contractors • ECO • ESO
A3 OCCUPATIONAL HEALTH AND SAFETY				
i. All contractors must ensure that they have received occupational health and safety training in terms of the Occupational Health and Safety Act, 1985 (Act 85 of 1993). ii. All contractors are to operate within the construction regulations of the Occupational Health and Safety Act, 1985 (Act 85 of 1993). iii. All contractors are to comply with the Occupational Health and Safety Act, 1985 (Act 85 of 1993). iv. Employees and operations during the Operational Phase must comply to all the requirements of the Occupational Health and Safety Act, 1985 (Act 85 of 1993).	• To be in compliance to the relevant Occupational Health and Safety Legislation.	• No reportable incidents or findings during audits.	• Continuous, as and when required	• Developer/ Abattoir Owner • Contractors • ECO • ESO
A4 METHOD STATEMENTS				
i. As required in Section 2.3, certain method statements must be provided by the contractor. All activities which require method statements may only commence once the method statements have been approved by the Engineer and or ECO as applicable. ii. Where applicable, the contractor will provide job-specific training on an *ad hoc* basis when workers are engaged in activities, which require method statements.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase	• Approved method statements and relevant pro forma documents • Training records	• Continuous, as and when required	• Contractor • ESO • ECO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
A5 SITE DEMARCATION AND DEVELOPMENT				
i. The surveys for the overall project area and construction footprint must be complete and clearly demarcated and fenced before the contractors set up their crew camps or begin construction. ii. "No-go" areas such as sensitive areas identified during the specialist process, rocky outcrops, land not to be developed, topsoil stockpiles, etc. must be clearly demarcated (e.g. warning tape) and fenced (where possible) prior to the commencement of construction activities. iii. All occurrences of contaminated land or anticipated pollutants should be collected and removed to a registered waste management facility licensed to process these. Safe Disposal Certificates must be obtained upon treatment.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase	• Demarcated area's • Filled in section of this document	• Continuous, as and when required	• Developer/ Abattoir Owner • Contractors • ECO • ESO
A6 DRAINAGE, EROSION AND HYDROLOGY				
i. If possible, construction activities must be scheduled for the dry winter months to decrease the risk of erosion during heavy thunderstorms. ii. All construction activities must remain within the boundaries of the development area, as demarcated at the start of construction. There must be no vehicular access to the drainage lines outside the development area. iii. No construction activities may occur within any drainage lines. iv. Soil types subject to large expansion and contraction can adversely affect construction costs or cause serious damage to buildings. Heavy soils subject to water logging can create drainage problems and allow pools of stagnant water to form.	• Minimise pollution of soil, surface and ground water resources in the immediate and surrounding environments • Minimise impeding the natural flow of water • Minimise the impact on natural water flow dynamics	• No visible signs of pollution • No signs of siltation of water courses • No erosion or siltation downstream • No deviation from baseline data during regular sampling	• Continuous, as and when required	• Developer/ Abattoir Owner • Contractors • ECO • ESO
A7 INTENSIVE HOUSING SYSTEMS				
i. Clean source of drinking water is to be planned and designed for. Measures must be in place to ensure this water does not become contaminated. Depending on the volume of water abstracted from any borehole such use may require a water use licence, which must be applied for from the DWA. ii. When considering food supply, feeding troughs and self-feeders must be placed as far away from dunging areas and drinking nipples as possible to prevent food contamination.	• To limit the potential impacts through design measures.	• Decrease in corrective actions needed during the construction and operational phases.	• Design Phase	• Developer/ Abattoir Owner

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
A7 INTENSIVE HOUSING SYSTEMS (CONTINUED)				
iii. For convenient, economical and sound environmental management, the design of the abattoir must bear the following in mind: • Units must preferably be north facing. • Buildings must preferably be 12 – 18 metres apart. • Terrain must be well drained and have a slope of at least 2% – 4%. • Prevailing winds must be taken into account considering the potential effects on local residents. • Sufficient water and electricity supply to ensure efficient environmental control. iv. Provision must be made for weighing and loading areas.	• To limit the potential impacts through design measures.	• Decrease in corrective actions needed during the construction and operational phases.	• Design Phase	• Developer/ Abattoir Owner
A8 WASTE MANAGEMENT				
i. Strategies are to be devised and implemented to ensure that by-products do not become a nuisance. Purification, recycling of liquid effluent and alternative use of the effluent must be investigated. ii. Handling of solid manure is preferred to handling of liquid manure. This ensures that water usage and effluent generation is kept to a minimum. iii. Concrete slatted concrete flooring is recommended, and in some instances required by the Meat Safety Act of 2000, for effective manure handling and removal. iv. Management and design of flush tanks on 'manure removal systems' must be mindful of potential impact to the environment and its resources. Operation of and the condition of the equipment used for manure extraction must be controlled and managed to ensure no contamination of outside resources is possible.	• Sustainable management of waste by recycling • To keep the site neat and tidy • Minimise litigation and complaints by I&APs • Reduce visual impact • Control potential influx of vermin and flies thereby minimising the potential of diseases on site and the surrounding environment • Minimise potential to pollute soils, water resources and natural habitats	• Disposal of rubble and refuse in an appropriate manner with no rubble and refuse lying on site • Site is neat & tidy • No complaints from surrounding residents and businesses • Sufficient containers available on site • No visible or measurable signs of pollution of the environment (soils, ground and surface water) • Method statement	• Design Phase & Daily	• Developer/ Abattoir Owner

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
A9 DISEASE CONTROL				
i. The abattoir must have emergency plans to deal with disease outbreaks. This includes the design and planning for isolation pens and mass disposal areas. ii. The design of lay-out of the abattoir must consider: • The proximity of water sources that can be polluted by the flow-off from the unit. • Availability of sufficient water encourages proper cleaning. • Effective methods of manure handling to reduce the risk of disease. • The management and control of potential disease transfer from visiting farmers, sales representatives and delivery vehicles. iii. The design must take into account which ventilation systems (natural or mechanical) will be best suited to the operation, taking into account possible air contamination of the animals, manure and feed. iv. The control of bacteria must be considered in the design of the unit lay-out. For example, the breeding units and grower units must be on different sites. v. Staff must be regularly trained in procedures pertaining to containment of disease outbreaks and destruction and disposal of diseased animals, hygiene in the working environment, and the regulations that must be complied with in national and provincial health legislation.	• To limit the potential impacts through design measures.	• Decrease in corrective actions needed during the construction and operational phases.	• Design Phase	• Developer/ Abattoir Owner
A10 EMERGENCIES, NON-COMPLIANCE AND COMMUNICATION				
i. The contractor must provide **method statements** on the protocols to be followed, and contingencies to be put in place (**Emergency Response Plans**) for the following potential incidents before construction may begin: • Contamination of natural water resources from spills; • Contamination of soils from spills; and • Fire. ii. Communication in emergencies must follow the suggested lines of communication as stipulated Section 2.1, Figure 2. iii. All contractors must take corrective action to mitigate an incident appropriate to the nature and scale of the incident and must also rehabilitate any residual environmental damage caused by the incident or by the mitigation measures themselves.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase	• Method statements • Reporting of incidents	• Continuous, as and when required	• Contractor • ESO • ECO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
A10 EMERGENCIES, NON-COMPLIANCE AND COMMUNICATION (CONTINUED)				
iv. Major environmental incidents must be reported to the relevant authorities in accordance with the provisions of Section 30 of the National Environmental Management Act of 1998 and Section 20 of the National Water Ac t of 1998. v. The contractor understands that failure to adhere to the requirements of the EMPr will result in fines as stipulated in Section 4.1.1 'Tolerances', over and above the costs incurred for any remediation required as result of the specific non-compliance	• Contingencies for minimising negative impacts anticipated to occur during the construction phase	• Method statements • Reporting of incidents	• Continuous, as and when required	• Contractor • ESO • ECO

Table 4: Management Table and Mitigation Measures for Materials during the Construction Phase of the Development

PHASE OF DEVELOPMENT	CONSTRUCTION
IMPACT / ISSUE	MATERIALS
SECTION	B

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
B1 STOCKPILES				
i. The contractor must provide **method statements** for the "stockpiling" prior to construction taking place. ii. All stockpiled material must be easily accessible without any environmental damage. iii. All temporarily stockpiled material must be stockpiled in such a way that the spread of materials are minimised. iv. The stockpiles may only be placed within the demarcated areas the location of which must be approved by the ER or ECO. v. The contractor must avoid vegetated areas that will not be cleared. vi. Storm water run-off from the stockpile sites and other related areas must, where directed into the storm water system, be fitted with the necessary pollution prevention measures such as silt traps and may not run freely into the immediate and surrounding environments. vii. Stockpiles are to be stabilised if signs of erosion are visible. viii. Soils from different horizons must be stock piled such that topsoil stockpiles do not get contaminated by sub-soil material. ix. Topsoil stockpiles (if relevant) must be monitored for invasive exotic vegetation growth. Contractors must remediate as required in consultation with the ECO. x. No plant, workforce or any construction related activities may be allowed onto the topsoil stockpiles. xi. Topsoil stockpiles must be clearly demarcated as no-go areas. xii. Topsoil stock piles must not be higher than 2m to avoid compaction thereby maintaining the soil integrity and chemical composition. xiii. For excessive heights of fill and spoil stockpiles, approval must be received from the ECO and the necessary management measures as communicated by the ECO implemented.	• Minimise scaring of the soil surface and land features • Minimise disturbance and loss of soil • Minimise construction footprint • Minimise sedimentation of nearby drainage lines • Maintain the integrity of topsoil's for landscaping and rehabilitation • Containment of invasive plant growth • Minimise contamination of storm water run-off	• No visible erosion scars once construction is completed • The footprint has not exceeded the approved development site, etc. • Minimal invasive weed growth • No signs of sedimentation and erosion	• Monitored daily	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
B2 CEMENT				
i. The contractors must provide and maintain a **method statement** for "cement and concrete batching" prior to construction taking place. The method statement must provide information on proposed storage, washing & disposal of cement, packaging, tools and plant. ii. Cement containing run-off into soils, rocky outcrops, streams and natural vegetation must be avoided at all times. iii. The mixing of concrete must be done at specifically selected sites on mortar boards or concrete aprons (or similar structures) where applicable. iv. Proper cleaning trays must be implemented and utilised on site for the cleaning of cement mixing and handling equipment. v. All empty containers must be stored in a dedicated area and later removed from the site for appropriate disposal at a licensed facility. Note that empty cement bags must be "washed" (wetted down) prior to disposal to ensure that all toxic dust reacts. vi. Any spillage that may occur must be investigated and immediate remedial action must be taken. vii. The visible remains of concrete, either solid, or from washings, must be physically removed immediately and disposed of as waste to a registered landfill site. viii. Centralised cement batching areas must be located in consultation with the ER, ESO or ECO to ensure that the proposed location does not fall within sensitive areas such as drainage lines, storm water channels, etc. Measures must be put in place to further ensure that residues are contained and will not enter drainage lines, storm water channels, etc.	• Minimise the possibility of cement residue entering into the surrounding environment • Minimise pollution of soil, surface and ground water resources	• No evidence of contaminated soil on the construction site • No evidence of contaminated water resources • Method statement	• Monitored daily	• Contractors • ECO • ESO
B3 OIL AND CHEMICALS				
i. The contractor must provide **method statements** for the "handling & storage of oils and chemicals" and "emergency spills procedures" prior to construction taking place. ii. These substances must be confined to specific and secured areas within the contractor's camp, and in a way that does not pose a danger of pollution even during times of high rainfall. iii. Storage areas must be imperviously bunded with adequate containment (at least 1.5 times the volume of the fuel) for potential spills or leaks	• Prevention of pollution of the environment • Minimise chances of transgression of the acts controlling pollution	• No pollution of the environment • No litigation due to transgression of pollution control acts • No complaints from I&APs • Method statements	• Monitored daily	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
B3 OIL AND CHEMICALS (CONTINUED)				
iv. Drip trays (minimum of 10cm deep) must be placed under all plant and vehicles that stand for more than 24 hours. Vehicles suspected of leaking must not be left unattended, drip trays must be utilised. v. The surface area of the drip trays will be dependent on the vehicle and must be large enough to catch any hydrocarbons that may leak from the vehicle while standing. vi. The depth of the drip tray must be determined considering the total amount / volume of oil in the vehicle. The drip tray must be able to contain the volume of oil in the vehicle. vii. Emergency spill kits must be available on site and in all vehicles that transport hydrocarbons for dispensing to other vehicles on the construction site. Spill kits must be made up of material/product that is in line with environmental best practice (SUNSORB is a recommended product that is environmentally friendly). viii. All spilled hazardous substances must be contained in impermeable containers for removal to a licensed hazardous waste site, (this includes contaminated soils, and drenched spill kit material). ix. All spilled material must be recorded in a spills register/incident register along with the date of occurrence and corrective action taken.	• Prevention of pollution of the environment • Minimise chances of transgression of the acts controlling pollution	• No pollution of the environment • No litigation due to transgression of pollution control acts • No complaints from I&APs • Method statements	• Monitored daily	• Contractors • ECO • ESO
B4 DANGEROUS AND TOXIC MATERIALS (PROVISION OF STORAGE FACILITIES)				
i. The contractor must supply a **method statement** for the "storage of hazardous materials" at tender stage or prior to construction taking place. ii. Materials such as fuel, oil, paint, herbicide and insecticides must be sealed and stored in bermed areas, on impermeable surfaces, under lock and key, in well-ventilated areas. iii. Storage areas must display the required safety signs depicting "No Smoking", "No Naked lights" and "Danger". Containers must be clearly marked to indicate contents as well as safety requirements. iv. Material Safety Data Sheets (MSDS) must be available for all hazardous substances on site and sourced by the supplier where relevant. MSDS's must be updated as required. v. All spilled material must be recorded in a spills register/incident register along with the date of occurrence and corrective action taken.	• Prevention of pollution of soil, surface and ground water resources in the immediate and surrounding environments • Minimise chances of transgression of the acts controlling pollution	• No visible signs of pollution • No litigation due to transgression of pollution control acts	• Monitor daily	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
B4 DANGEROUS AND TOXIC MATERIALS (PROVISION OF STORAGE FACILITIES) – (CONTINUED)				
vi. Sufficient care must be taken when handling these materials to prevent pollution and the appropriate PPE should be worn at all times. Training on the handling of dangerous and toxic materials must be conducted for all staff prior to the commencement of construction. vii. In the case of pollution of any surface or groundwater, the ECO must immediately be informed in order to ensure that Regional Representative of the Department of Water Affairs (DWA) is notified accordingly.	• Prevention of pollution of soil, surface and ground water resources in the immediate and surrounding environments • Minimise chances of transgression of the acts controlling pollution	• No visible signs of pollution • No litigation due to transgression of pollution control acts	• Monitor daily	• Contractors • ECO • ESO
B5 USE OF OILS AND CHEMICALS & DANGEROUS AND TOXIC MATERIALS				
i. The contractor must keep the necessary materials and equipment on site to deal with spills and fire of the materials present, should they occur. ii. When dangerous and toxic materials or oils and chemicals are to be used on site, they should be conveyed in drip trays and never placed/stored on bare soil. iii. The contractor must set up a procedure for dealing with spills/ fire, which will include notifying the ECO and the relevant authorities prior to commencing with construction. These procedures must be developed with consultation and approval by the appointed ESO and/or ECO. iv. All spilled material must be recorded in a spills register/incident register (Refer to Annexure 5) along with the date of occurrence and corrective action taken.	• Prevention of pollution of soil, surface and ground water resources in the immediate and surrounding environments • Minimise chances of transgression of the acts controlling pollution	• No pollution of the environment • No litigation due to transgression of pollution control acts	• As required	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
B6 BULK STORAGE OF FUELS AND OILS (IF APPLICABLE)				
i. The contractors must provide and maintain a **method statement** for "Diesel tanks and refuelling procedures" as well as "decommissioning of bulk fuel storage facilities" prior to construction taking place. ii. Bulk fuel storage tanks on the site must be on an impervious surface that is bunded and able to contain at least 110% of the total volume of the tanks/storage containers. The bund capacity and total storage volumes should be indicated on the bund facility. iii. The filler tap/ dispensing unit must be located inside the bunded area iv. The bund should be fitted with a drainage tap linked to an "oil-water separator" to facilitate servicing during periods of high precipitation or rupturing of the tank. v. A Flammable Liquid License may be required for storage of diesel or petrol in certain volumes, based on local municipal by-laws. vi. Bulk fuel storage tanks must be located in a portion of the construction camp where they do not pose a high risk in terms of water pollution (i.e. they must be located away from water courses). vii. Bulk fuel storage tanks must be placed so that they are out of the way of traffic, so that the risk of the tanks being ruptured or damaged by vehicles is minimised. viii. Bulk fuel storage areas should be covered during the rainy season by means of a corrugated iron roof or tarpaulin covers. ix. Tally sheets of all Diesel procured and used on site must be kept to ensure that theft/spills and evaporation is accounted for. **Note** that Environmental Authorisation is required for volumes greater than 80 000 litres.	• Prevention of pollution of soil, surface and ground water resources in the immediate and surrounding environments • Minimise chances of transgression of the acts controlling pollution	• No visible signs of pollution • No litigation due to transgression of pollution control acts • Method statement	• Once off on inception; and • As required	• Contractors • ECO • ESO

Table 5: Management Table and Mitigation Measures for Plant & Employees during the Construction Phase of the Development

PHASE OF DEVELOPMENT	CONSTRUCTION
IMPACT / ISSUE	PLANT & EMPLOYEES
SECTION	C

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
C1 EATING AREAS AND CAMP FOLLOWERS				
i. The contractors must provide and maintain a **method statement** for "Crew camps and construction lay down areas" prior to construction taking place. ii. The Contractor must, in conjunction with the ESO or ECO, designate restricted eating areas for eating during normal working hours (eating areas to conform to the requirements of the Occupational Health and Safety Act, Act 85 of 1993). iii. Adequate closed refuse bins must be provided and cleaned on a daily basis. iv. The feeding, or leaving of food, for stray or other animals in the area is strictly prohibited. v. Should vectors (stray animals, flies, etc.) become problematic on site, the appropriate control measures must be implemented (such as environmentally friendly traps, contacting of animal control, etc.). vi. Camp followers/informal traders must not be allowed to congregate on pavements or outside the construction site. However, at the contractors discretion facilities can be made available within the designated eating area. vii. Only security personnel will be allowed to sleep over on site. viii. Litter (even if originating outside the camp) and empty concrete bags, etc. must be picked up daily and put into suitably closed bins. ix. No fires are to be lit without written authorisation by the landowner. Should permission be received, fires may not be constructed outside of specially equipped and designed facilities, with appropriate fire fighting measures in order to contain fires. The adequacy and positioning of these structures must be determined in consultation with the ESO and ECO.	• Control potential influx of vermin and flies • Neat work place and hygienic environment • Minimise negative social impacts to local residents and businesses	• No visual sign of vermin and flies • No complaints from I&APs	• Once off on inception; and • Monitored daily	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
C2 TOILETS AND ABLUTION FACILITIES				
i. The contractor is responsible for providing all sanitary arrangements for his and the sub-contractors team. A minimum of one chemical toilet must be provided per 15 persons. ii. Regular inspections shall be carried out to ensure toilets are kept in a hygienic state. iii. The contractor must ensure that the staff is sensitised to the fact that they must use these toilets at all times. iv. Sanitary arrangements must be to the satisfaction of the ECO and the local authority. Toilets must be of the chemical type or flush-toilets connected to the municipal sewer system. The contractor must keep the toilets in a clean, neat and hygienic condition. The contractor must supply toilet paper at all toilets at all times. v. Toilets provided by the contractor must be easily accessible and a maximum of 50m from the works area to ensure they are utilised. All toilets will be located within the contractor's camp. Should toilets be needed elsewhere, their location must first be approved by the ER or ECO. vi. The contractor (who must use reputable toilet-servicing company) must be responsible for the cleaning, maintenance and servicing of the toilets. The contractor (using reputable toilet-servicing company) must ensure that all toilets are cleaned and emptied before the builders' or other public holidays. vii. Toilets out on site must be secured to the ground and have a sufficient locking mechanism operational at all times. viii. Toilets must not be the cause of visual impact and shade net should be erected around toilets where these are visible to the general public.	• Ensure proper sanitation is achieved which will encourage the workforce to utilise toilets provided and not the surrounding habitat • Minimise potential of diseases on site • Minimise potential to pollute soils, water resources and natural habitats	• Workforce use toilets provided • No complaints received from I&APs as well as members of the workforce • No visible or measurable signs pollution of the environment (soils, ground and surface water)	• As and when required	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
C3 WASTE MANAGEMENT				
i. The contractors must provide and maintain a **method statement** for "solid waste management" prior to construction taking place. The method statement must provide information on proposed licensed facility to be utilised and details of proposed record keeping for auditing purposes. ii. Waste management should occur in line with the National Waste Management Strategy and the Waste Hierarchy which is: a. Waste avoidance and reduction; b. Recovery, Reuse and Recycling; c. Treatment; d. Disposal; and e. Remediation. iii. Waste must be separated into recyclable and non-recyclable waste, and must be separated as follows: a. Hazardous waste: including (but not limited to) old oil, paint, etc, b. General waste: including (but not limited to) construction rubble, c. Reusable construction material. d. Recyclable waste must preferably be deposited in separate bins. iv. Rubble and waste must be removed from the site frequently and disposed of at an appropriately licensed landfill site. v. A litter patrol around the construction camp is to take place twice a week to collect any litter that may have been strewn around. vi. The piling of any material that could rot and release unpleasant smells into the air will not be allowed. vii. Any illegal dumping of waste must not be tolerated, this action will result in a fine and if required further legal action will be taken and proof of legal dumping must be able to be produced on request. viii. Bins must be clearly marked for ease of management. ix. Refuse bins must be fitted with secured lids should it become necessary in order to prevent animals from gaining access or windblown litter occurring. x. Refuse bins must be strategically located around the construction site to handle the amount of litter, debris, and builder's wastes generated.	• Sustainable management of waste by recycling • To keep the site neat and tidy • Minimise litigation and complaints by I&APs • Reduce visual impact • Control potential influx of vermin and flies thereby minimising the potential of diseases on site and the surrounding environment • Minimise potential to pollute soils, water resources and natural habitats	• Disposal of rubble and refuse in an appropriate manner with no rubble and refuse lying on site • Site is neat and tidy • No complaints from surrounding residents and businesses • Sufficient containers available on site • No visible or measurable signs of pollution of the environment (soils, ground and surface water) • Method statement	• Daily	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
C3 WASTE MANAGEMENT (CONTINUED)				
xi. Sub-contractor(s) must contain a clause to the effect that the disposal of all construction-generated refuse / waste to an officially approved dumping site is the responsibility of the subcontractor in question. Proof of this undertaking must be issued to the ECO. xii. Subcontractors must be bound to all management activities of this EMPr. xiii. All solid and chemical wastes that are generated must be removed and disposed of at a licensed waste disposal site. The contractor is to provide proof of such to the EO/EM and ECO. xiv. A skip, with a cover, must be used to contain refuse from campsite bins, rubble and other construction material.	• Sustainable management of waste by recycling • To keep the site neat and tidy • Minimise litigation and complaints by I&APs • Reduce visual impact • Control potential influx of vermin and flies thereby minimising the potential of diseases on site and the surrounding environment • Minimise potential to pollute soils, water resources and natural habitats	• Disposal of rubble and refuse in an appropriate manner with no rubble and refuse lying on site • Site is neat and tidy • No complaints from surrounding residents and businesses • Sufficient containers available on site • No visible or measurable signs of pollution of the environment (soils, ground and surface water) • Method statement	• Daily	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
C4 DUST				
i. The contractors must provide and maintain a **method statement** for "dust control" prior to construction taking place. The method statement must provide information on the proposed source of water to be utilised and the details of the licenses acquired for such usage. ii. The clearing of vegetation must be kept to a minimum and only where required. iii. As far as possible, potable water must not be used as a means of dust suppression, and alternative measures must be sourced. The use of 'grey', 'brown' or raw water must be investigated as an alternative. The contractor will be responsible to source this water and obtain the required approvals to utilise this water for the purpose of dust suppression. iv. The construction camp must be watered during dry and windy conditions to control dust fallout. v. Dust production must be controlled by regular watering of roads and works area, should the need arise. (**NB:** Concrete dust is toxic and damages soil properties. Therefore watering to prevent dust spread must not be done where concrete dust has fallen or it will infiltrate into the soil. Concrete bags must not be allowed to blow around the site and spread cement dust). vi. Soil stockpiles which will be exposed for periods exceeding one week shall be covered, kept damp or protected using organic binding agents or alternative techniques that are not water intensive. vii. When it is deemed that the standard dust suppression measures are not sufficient or if complaints are received, main access roads and site camps must be surfaced with a temporary surface such as gravel to assist with dust suppression. viii. The unnecessary movement of construction vehicles should be avoided. ix. All vehicles transporting material that can be blown off (e.g. soil, rubble etc.) must be covered with a tarpaulin, and speed limits of 20 km/h must be adhered to. x. Excessive dust conditions must be reported to the ECO. xi. Should excessive dust fallout be noted on site, regular monitoring of dust fallout must then be carried out and the records kept on site. xii. All forms of dust pollution must be managed in terms of the National Environmental Management: Air Quality Act (Act no. 39 of 2004) [NEM:AQA].	• Reduce dust fall out • Reduce visual impact • Minimise loss of valuable soil material	• No visible signs of dust • No complaints from interested and Affected parties • No incidences reported to ECO • No visible evidence of dust contamination on the surrounding environment • Method statement • Targets not exceeded during monitoring of dust counts (when taking place)	• Monitored daily	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
C5 WORKSHOP EQUIPMENT, MAINTENANCE AND STORAGE				
i. The contractors must provide and maintain a **method statement** for "workshop maintenance and cleaning of plant" prior to construction taking place. ii. All maintenance and washing of vehicles and equipment must take place in the workshop area that is equipped with a bund wall and grease trap oil separator. During emergency servicing of vehicles or equipment, a suitable drip tray must be used to prevent spills onto the soil, especially where emergency repairs are done outside the workshop area. iii. Equipment must be inspected regularly for serviceability. All leaking equipment must be repaired immediately or be removed from site to facilitate repair. All potentially hazardous and non-degradable waste must be collected and removed to a registered waste site. iv. Workshop areas must be monitored for oil and fuel spills and such spills must be cleaned and remediated to the satisfaction of the ER or ECO. Cleaning and remediation must be done with products that are in line with best environmental practice i.e. SUNSORB, Drizit, etc. v. The Contractor must be in possession of an emergency spill kit that is complete and available at all times on site. The Contractor must ensure that senior and other relevant members of the workforce are trained in dealing with spills by using emergency spill kits. vi. The following must be applied: • All contaminated soil / yard stone shall be removed and disposed of as hazardous waste at a registered facility or placed in containers to be taken to one central point where bio-remediation can be done. (Bio-remediation should only be an option if an Environmental Authorisation has been issued). • A specialist Contractor shall be used for the bio-remediation of contaminated soil where the required remediation material and expertise is not available on site. • All spills of hazardous substances must be reported to the ESO and/or ER, and relayed to the ECO. • The contractor must comply with the regulations of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993).	• Prevent pollution of the environment • Minimise chance of transgression of the acts controlling pollution • Disposal of hazardous substances in an appropriate manner	• No pollution of the environment • No litigation due to transgression of pollution control acts • Method statement	• Monitor daily	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
C6 NOISE				
i. Should excessive complaints be received, monitoring of noise levels must be conducted regularly during construction and the records kept on site. ii. All construction vehicles must be in a good working order to reduce possible noise pollution. iii. All construction equipment or machinery should be switched off when not in use. iv. Work hours during (06:00 – 18:00 during weekdays; 08:00 – 15:00 on Saturdays with no work on Sundays and Public Holidays) the construction phase must be strictly enforced unless permission is otherwise granted. Permission must not be granted without consultation and approval from surrounding businesses. v. Noise reduction is essential and Contractors must endeavour to limit unnecessary noise, especially loud talking, shouting or whistling, radios, sirens or hooters, motor revving, etc. vi. Noisy activities must take place only during working hours. The ESO must inform the residents of businesses adjacent to the development in writing 24 hours prior to any planned activities that will be unusually noisy or any other activities that could reasonably have an impact on the adjacent sites. These activities could include, but are not limited to, blasting, piling, use of pneumatic jack-hammers and compressors, bulk demolitions, etc. vii. The conditions as set out in the Occupational Health and Safety Act No. 85 of 1993 must be adhered to be the contractor, especially where noise levels will exceed 85 dB.	• Maintain noise levels below "disturbing" as defined in the National Noise Regulations • Minimise the nuisance factor of the development	• No complaints from surrounding landowners or I&APs	• As and when required	• Contractors • ECO • ESO

Table 6: Management Table and Mitigation Measures for Actual Construction Activities during the Construction Phase of the Development

PHASE OF DEVELOPMENT	CONSTRUCTION
IMPACT / ISSUE	ACTUAL CONSTRUCTION ACTIVITIES
SECTION	D

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
D1 CREW CAMPS				
i. The contractors must provide and maintain a **method statement** for "Crew camps and construction lay down areas" prior to construction taking place. ii. Prior to establishment of any construction crew camp(s), the Contractor shall produce a plan showing the positions of all buildings, laydown yards, and other infrastructure for approval by the ECO. iii. Accommodation for members of the workforce is not permitted on site unless authorisation has been given by the Landowner and Proponent in consultation with the ECO. iv. Sufficient potable water shall be provided for drinking, cooking and ablutions. v. Dedicated wash areas must be situated away from watercourses and areas of shallow groundwater. vi. Dust suppression must be applied at the contractor's camp as required. This may include the laying of gravel. The use of grey water can be considered as an option if the required permits have been acquired. vii. The contractor's camp, offices and storage facilities must be located within the site boundaries. No person must be allowed to stay on neighbouring sites, unless it is cleared with the owner. In such an event, all requirements of the EMPr will apply. viii. A suitable and safe area for storage of the construction material must be provided. ix. The contractor must provide labourers plastic bags to clean up the contractor's camp and construction site on a daily basis. These areas must then be inspected by the contractor or his/her ESO to ensure compliance with this requirement. x. The contractor is responsible for cleaning the contractor's camp and construction site of all structures, equipment, residual litter and building materials at the end of the construction period and topsoil restored in areas where landscaping is to take place.	• Minimise water pollution • Minimise dust fallout • Minimise unwarranted environmental damage outside the footprint • Maintain a clean and healthy working environment • Minimise impact to surrounding environment	• No signs of water or soil pollution • No complaints from surrounding landowners or I&APs • No visible signs of litter • Method statements	• Monitor daily	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
D2 FIRES				
i. The contractors must, prior to construction taking place, provide and maintain a **method statement** for "fires", clearly indicating where and for what fires will be utilised plus details on the fuel to be utilised ii. Absolutely no burning of waste is permitted. iii. Fires will only be allowed in facilities especially constructed for this purpose within fenced Contractor's camps. iv. Wood, charcoal or anthracite are the only fuels permitted to be used for fires. The contractor must provide sufficient wood (fuel) for this purpose. v. Fires within the designated areas must be small in scale so as to prevent excessive smoke being released into the air. vi. No wood or any other material is to be collected, chopped or felled for fires from private or public property as well as from no-go or sensitive areas within the site and any surrounding natural vegetation.	• Minimise risk of veldt fires • Minimise destruction of natural fauna and flora • Maintain safety on site	• No veldt fires started by the contractor' s workforce • No claims from landowners for damages due to veldt fires • Method statement	• Monitor daily	• Contractors • ECO • ESO
D3 EROSION AND SEDIMENTATION				
i. All slopes that are disturbed during construction may result in slope instability and erosion by rain and surface run-off and must immediately be stabilised to prevent erosion. Where re-vegetation of slopes is undertaken, this must be done in accordance with the landscape architect (or appointed landscaper). ii. Construction activities must preferably take place during the dry winter months to reduce the potential for erosion. iii. Areas prone to erosion should be monitored and the necessary mitigation measures such as sand bags, earth berms, soil saver blankets and temporary vegetation should be initiated on site if necessary. iv. To reduce the loss of material by erosion, the contractor must ensure that disturbance on site is kept to a minimum. The contractor is responsible for rehabilitating all eroded areas in such a way that the erosion potential is minimised after construction has been completed. v. All disturbed areas will require rehabilitation must be mulched to encourage vegetation re-growth. Mulch used must be free from alien seed. vi. These areas must be cordoned off so that vehicles or construction personnel cannot gain access to these areas.	• Minimise erosion damage • Minimise impeding the natural flow of water • Minimise scarring of the soil surface and land features • Minimise disturbance and loss of topsoil • Re-growth of disturbed areas	• No erosion scars • No loss of topsoil • No interference with the natural flow of water • No visible erosion scars once construction is completed • The footprint has not exceeded the agreed boundaries • All damaged areas successfully rehabilitated	• As and when required	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
D4 HERITAGE				
i. In terms of the National Heritage Act, 1999 (Act No. 25 of 1999), construction personnel must be alert and must inform the local heritage agency should they come across any findings of heritage resources, other than those already identified, within 24 hours. ii. Should any archaeological artefacts be exposed during construction activities, work on the area where the artefacts were found must cease immediately and the ECO must be notified within 24 hours. iii. Upon receipt of such notification, the ECO will arrange for the excavation to be examined by an Archaeologist. iv. Under no circumstances must archaeological artefacts be removed, destroyed or interfered. Any archaeological sites exposed during demolition or construction activities must not be disturbed prior to authorisation by the South African Heritage Resources Agency on the appropriate provincial heritage resource agency.	• Limit the destruction of the country's heritage resources • The preservation and appropriate management of new archaeological finds should these be discovered during construction • Conform to the requirements of specialist studies	• No destruction of or damage to known archaeological sites	• Monitor Daily	• Contractors • ECO • ESO
D5 FAUNA				
i. All activities on site must comply with the regulations of the Animal Protection Act, 1962 (Act No. 71 of 1962). ii. All construction workers must be informed that the intentional killing of any animal is not permitted as faunal species are a benefit to society. This should be covered during inductions and toolbox talks and proof presented on request. iii. Environmental induction training and awareness must include aspects dealing in safety with wild animals into and on site. Focus on animals such as snakes and other reptiles that often generate fear by telling workers how to move safely away and to whom to report the sighting. Workers should also be informed where snakes most often hide so that they can be vigilant when lifting stones, etc. iv. In the case of a problem animal e.g. a large snake, a specialist must be called in to safely relocate the animal if the ESO or ECO is not able to. v. Poaching or the intentional killing of animals (even snakes) is illegal and it must be a condition of employment that any employee caught poaching will be dismissed. vi. The construction area must be swept for nests, dens and other habitats prior to construction taking place. vii. If possible, artificial roosting and nesting sites such as bat boxes and owl nesting boxes should be erected within the natural areas surrounding the development	• Minimise disturbance to animals • Minimise interruption of breeding patterns of birds • Minimise destruction of habitat	• No complaints from Nature Conservation • No litigation concerning applicable animal protection acts • No measurable or visible signs of habitat destruction	• Monitor daily	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
D6 FLORA				
i. Trees and natural vegetation or any other natural features inside and outside the work area, which will not be cleared for construction purposes, must be clearly demarcated. These features may not be defaced, removed, painted for benchmarks or otherwise damaged, even for surveying purposes. Any feature defaced by the contractor must be reinstated to the satisfaction of the ECO. ii. Connectivity with any corridors to surrounding natural areas must be maintained and protected; corridors must be demarcated as no-go areas. iii. An alien invasive eradication and monitoring plan must be compiled and implemented whereby all emergent invasive species are removed during construction. iv. Plants that are proclaimed as problem plants, noxious weeds or declared invaders must be removed immediately. These plants, as well as any other problem plants must be continually eradicated prior to going into seed. v. Physical (manual) removal of vegetation is preferred over the chemical removal (use of herbicides) of vegetation to minimise contamination of soil. vi. All construction vehicles, equipment, and construction material should be free of plant material. Therefore, all equipment and vehicles should be thoroughly cleaned prior to access on to the construction site. This should be verified by the ECO. vii. Since the area surrounding the study area supported similar species as the study area, the relocation of the provincially protected plant species *Aloe zebrina* and *Gladiolus sp.* is not recommended. However, if any landscaping is considered around the proposed development, the indigenous species which have been recorded within the study area should be used, especially *Aloe zebrina* since the survival rate of transplanted individuals of this species is generally high. viii. Locally indigenous plants must be used during landscaping and rehabilitation of the site. Species such as *Aloe zebrina* is not only an important food source for various avifaunal and invertebrate species but can also be used as an effective soil binder during the rehabilitation process. ix. No open fires shall be allowed on site under any circumstances, fires will only be permitted in adequate facility within the crew camp. x. The contractor must rehabilitate the construction camp and any other disturbed areas once construction activities have terminated. Compacted areas will be ripped and mulched in order to ensure recovery of the natural vegetation cover. A method statement must be provided and maintained by the contractor.	• Minimal disturbance to vegetation where such vegetation does not interfere with construction in terms of approvals from the relevant authority • Prevent litigation concerning removal of vegetation • Encourage natural habitat fauna • Minimise scarring of the soil surface and land features • Minimise disturbance and loss of topsoil • Minimise risk of veldt fires • Minimise risk of fauna and flora destruction • Conform to the requirements of specialist studies	• No litigation due to removal of vegetation without necessary permission • No exotic plants used for landscaping • No visible erosion scars once construction is completed • The footprint has not exceeded the agreed boundaries • All damaged areas successfully rehabilitated • No veldt fires started by contractors work force • No claims from landowners for damages due to veldt fires • Method statement	• As and when required	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
D7 NO-GO / SENSITIVE AREAS				
i. The construction footprint must be kept to a minimum must be clearly demarcated (e.g. warning tape) and fenced prior to the commencement of construction activities, thus reducing the infringement of the development on surrounding habitats. All construction activities must remain within the boundaries of the development area, as demarcated at the start of construction. ii. No-go areas must be demarcated with fencing/warning tape and signs before any construction activities commence. These areas and the type of fencing/demarcation must be approved by the ECO and the ECO must be involved in the demarcation process to make sure the correct areas are fully demarcated.	• Minimise the potential for the spread of the of the construction footprint • Reduce loss of fauna and flora habitat • Minimise the potential for loss of protected and or endangered fauna and flora species	• No sign of movement through "no go" areas. • Containment of footprint	• Monitor daily	• Contractors • ECO • ESO
D8 ACCESS ROUTE/HAUL ROADS				
i. No unauthorised access is permitted to the construction area. Any authorised clearing for access roads must be done under the supervision of the ECO. ii. Any damaged or degradation will be investigated and fines issued, the affected areas must be immediately rehabilitated. iii. Access roads for earthmoving-equipment must be clearly designated and be positioned as close as possible to the proposed development site. iv. No driving off from the marked roads is permitted. v. Designated parking areas must be identified and demarcated with applicable signage. vi. Neither the site nor its access roads must be allowed to be utilised for recreational activities, this includes but is not limited to quad bikes, 4x4's and dirt bikes. Security personnel must be informed and ensure that this is enforced.	• Minimise loss of topsoil and enhancement of erosion • Minimise fauna and flora displacement by destruction of natural habitats	• No erosion on access roads after completion of construction • No loss of topsoil due to run-off water on access roads	• As required, monitor daily	• Contractors • ECO • ESO
D9 CRIME, SAFETY AND SECURITY				
i. No site staff, other than security personnel and skeleton staff will be housed on site. Security personnel and skeleton staff must be supplied with adequate protective clothing, ablution facilities, water and refuse collection facilities, facilities for cooking and heating so that open fires are not necessary.	• Reduce the risk of potential incidences • Minimise the potential impact on the environment	• No incidences reported	• Monitor daily	• Developer / Abattoir Owners • Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
D9 CRIME, SAFETY AND SECURITY (CONTINUED)				
ii. The construction area must be secured by means of a boundary/ perimeter fence. This will serve to prevent public access to the site, for public safety and for security reasons (theft). iii. Access to the site must be controlled so as to restrict unauthorised personnel from entering the site. iv. The workers on site must retain some means of identification. The ESO and the contractor are responsible for ensuring that only authorised personnel are on site at all times. v. The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act, 1993 (Act 85 of 1993) and the National Building Regulations. vi. The contractor must ensure that all **emergency procedures/method statements** are in place prior to commencing work. Emergency procedures must include (but not be limited to) fire, spills, contamination of the ground, accidents to employees, use of hazardous substances and materials, etc. vii. The contractor must ensure that lists of all emergency telephone numbers and contact persons are kept up to date. All numbers and names are to be posted at relevant locations throughout the construction site. viii. The nearest emergency service provider must be identified during all phases of the project as well as its capacity and the magnitude of accidents it will be able to handle. The contact details of this emergency centre, as well as the police and ambulance services must be available at prominent locations around the construction site and the construction crew camps.	• Reduce the risk of potential incidences • Minimise the potential impact on the environment	• No incidences reported	• Monitor daily	• Developer / Abattoir Owners • Contractors • ECO • ESO
D10 GEOTECHNICAL				
i. Founding conditions for individual structures must be confirmed by a qualified Geotechnical Engineer / Structural Engineer / Geologist. ii. All trenches and excavation works must be properly backfilled and compacted according to specifications given in sub-clause 5.2.4. Of SANS 1200DA, under supervision of a qualified engineer. iii. Mechanical methods of rock breaking will have noise and dust impacts that must be managed. iv. **Method Statements** for chemical breaking must be provided by the ER.	• Minimise potential structural faults • Minimise trench collapse	• No visible signs of backfill deterioration or trench collapse	• As and when required	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
D11 VISUAL IMPACT				
i. Shade cloth must be utilised to conceal and minimise the visual impact of contractor camps, lay down and storage areas. ii. Landscaping must enhance the aesthetic appeal of the development. iii. The buildings that are to be erected as well as skyline of the development must be aesthetically pleasing and blend into the area as far as possible. iv. Rubble and litter must be removed every two weeks or more often as the need arises and be disposed of at a registered landfill. v. The ECO in consultation with an appointed visual impact assessment specialist should comment on the visual impact as part of the ECO's monitoring requirements.	• Minimise visual impact	• No complaints from I&APs	• Monitor daily	• Contractors • ECO • ESO
D12 HYDROLOGY AND STORM WATER				
i. Holding area floors must be raised above ground level and slope to divert stormwater run-off away from the floor areas into the effluent system. The stormwater design must meet the requirement of the Meat Safety Act of 2000 and the Building Regulations and Building Standards Act of 1977. ii. An appropriate storm water management plan to be implemented prior to construction. iii. The Lead Authority and/or ECO must assess whether regular water sampling of surface and or ground water resources within the immediate and surrounding environment are necessary. Should this be the case, baseline data from sampling must be obtained relevant to the activity and sensitivity of the area. Regular sampling must then be carried out to determine deviations from the baseline data. iv. Increased run-off during construction must be managed using berms and other suitable structures as required to ensure flow velocities are reduced. This must be done in consultation with the Resident Engineer as well as the ECO. Storm water, wherever possible, should be allowed to soak into the land in the area on which the water fell e.g. retention ponds v. In the event of pollution caused as a result of construction activities, the contractor, according to section 20 of the National Water Act, 1998 (Act No. 36 of 1998) is be responsible for all costs incurred by organisations called to assist in pollution control and/or to clean up polluted areas. vi. The contractor must ensure that excessive quantities of sand, silt and silt-laden water do not enter the storm water system.	• Minimise pollution of soil, surface and ground water resources in the immediate surrounding environments • Minimise impeding the natural flow of water • Minimise the impact on natural water flow dynamics • Minimise scarring of soil surface & land features • Minimise damage to river and stream embankments • Minimise erosion of embankments and subsequent siltation of rivers and streams • Minimise damage to riverine habitats	• No visible signs of pollution • No signs of siltation of water courses • No visible erosion scaring once construction is completed • Minimum loss of topsoil • No access roads through river and stream banks • No visible erosion scars on embankments once construction is completed • No erosion or siltation downstream • No deviation from baseline data during regular sampling	• As and when required, monitor daily	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
D12 HYDROLOGY AND STORM WATER (CONTINUED)				
vii. Design of the storm water drainage system must ensure that the local and surrounding natural systems are not negatively impacted. Appropriate measures, e.g. erection of silt traps, or drainage retention areas to prevent silt and sand entering drainage channels or watercourses must be taken. viii. Total sealing of paved areas such as parking lots, driveways, pavements and walkways should not be permitted. Permeable material should rather be utilized for these purposes to minimise runoff. ix. No wastewater may run freely into any of the surrounding streets or naturally vegetated areas. Run-off containing high sediment loads must not be released into natural or municipal drainage systems or nearby watercourses. If this becomes a problem it is recommended that an attenuation pond be constructed to allow solids to settle prior to run-off leaving the site. x. All process areas must possess drain outlets. Humps must be constructed at all doorways to prevent the escape of effluent to stormwater drains. xi. Approval must be obtained from DWA for any activities that require authorisation in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998). xii. No vehicular access is allowed in permanently wet areas. xiii. It must be ensured that all equipment to be used is not the cause irreparable damage to wet areas. The contractor must, where required, use alternative methods of construction in such areas. xiv. "NO ENTRY" signs must be strategically placed along rivers, streams and other natural or man-made drainage lines which are in close proximity to access routes. xv. No roads are to be cut through river and stream banks as this may lead to erosion causing siltation of streams and downstream dams. Existing drifts and bridges must be used if the landowner gives his consent. Such structures must then be thoroughly examined for strength and durability before they are used.	• Minimise pollution of soil, surface and ground water resources in the immediate surrounding environments • Minimise impeding the natural flow of water • Minimise the impact on natural water flow dynamics • Minimise scarring of soil surface & land features • Minimise damage to river and stream embankments • Minimise erosion of embankments and subsequent siltation of rivers and streams • Minimise damage to riverine habitats	• No visible signs of pollution • No signs of siltation of water courses • No visible erosion scaring once construction is completed • Minimum loss of topsoil • No access roads through river and stream banks • No visible erosion scars on embankments once construction is completed • No erosion or siltation downstream • No deviation from baseline data during regular sampling	• As and when required, monitor daily	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
D13 SOIL				
Topsoil is considered to be the natural soil covering, and to include all organic matter. Depth may vary at each site, and must be determined on a site-specific basis and removed accordingly. *For this reason it is an extremely valuable resource for the rehabilitation and vegetation of disturbed areas.* ***Subsoil*** *is* the layer of soil immediately beneath the topsoil. i. The contractors must provide and maintain a **method statement** for "management of topsoil" prior to the commencement of construction. ii. Topsoil must be stripped from all areas that are to be utilized during the construction period and where permanent structures and access is required. These areas will include the permanent works, pipeline trenches, stockpiles, access roads, construction camps and lay-down areas. iii. Topsoil must be stripped after clearing of woody vegetation and before excavation or construction commences. iv. At the beginning of the construction phase, topsoil removed for vegetation clearance must be stripped to a minimum depth of 150 mm and stockpiled on the demarcated topsoil stockpile areas. v. All topsoil must be removed and stockpiled at designated areas. These areas are to be marked as "no-go" areas. vi. Single handling is recommended. Topsoil stock piles must not be higher than 2m to avoid compaction. vii. All topsoil stockpiles and windrows shall be maintained throughout the contract period in a weed free condition. Weeds appearing on the stockpiled topsoil shall be removed by hand. viii. Subsoil shall be stored separately from the topsoil if not used for construction purposes. ix. Soil shall be stored, shaped and sited in such a way that they do not interfere with the flow of water such that damming or erosion is caused, or itself be eroded through the action of water. x. Dust suppression is necessary for stockpiles older than a month if deemed necessary by the PM, RE or ECO – with either water or a biodegradable chemical binding agent. Alternatively, stockpiles may be grassed.	• Minimise scaring of the soil surface and land features • Minimise disturbance and loss of soil • Minimise construction footprint • Minimise sedimentation of nearby drainage lines • Maintain the integrity of topsoil's for future landscaping and rehabilitation • Containment of invasive plant growth • Ensure storm water system is functioning optimally • Address all exposed areas susceptible to erosion promptly to prevent the loss of valuable soil	• No visible erosion scars once construction is completed • The footprint has not exceeded the proved development site. • Minimal invasive weed growth • No signs of sedimentation and erosion • Method statement • No visible and/or detected signs of environmental degradation as a result of erosion on site; • No detected signs of significant contamination of soil • No visible and/or detected signs of reduced quality of surface water entering the watercourse delineated • No visible and/or detected signs of ecological degradation of the watercourse delineated.	• As and when required. Monitor daily.	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
D13 SOIL (CONTINUED)				
xi. Erosion berms should be installed to prevent gully formation and siltation of the wetland resource. The following points should serve to guide the placement of erosion berms: • Where the track has a slope of less than 2%, berms should be installed every 50m. • Where the track slopes between 2% and 10%, berms should be installed every 25m. • Where the track slopes between 10% and 15%, berms should be installed every 20m. • Where the track has a slope greater than 15%, berms should be installed every 10m. xii. Vegetation clearing should be kept to a minimum and phased where practical. xiii. As much vegetation growth as possible should be promoted within the proposed development area in order to protect soils and to reduce the percentage of the surface area which is paced. In this regard special mention is made of the need to use indigenous vegetation species as the first choice during landscaping; xiv. Backfilling must be undertaken in such a way that the final contours blend with the surrounding environment. xv. Remediated slopes must preferably be graded to slopes between 1:3 and 1:2. xvi. Remediated slopes can then be capped with topsoil. This requires a minimum layer of 100 mm in most areas. xvii. Disturbed surfaces to be rehabilitated must be ripped and the area must be covered with a layer of topsoil excavated from the site. xviii. Ripping must be done to a depth of 250 mm in two directions at right angles. Topsoil must be placed in the same soil zone from which it has been stripped. xix. All disturbed and compacted areas shall be sloped and ripped subsequent to construction, before rehabilitation commence. xx. The re-vegetation of affected areas shall take place concurrently during construction with specific reference to progressive rehabilitation practices. *xxi.* Hydrocarbon spills shall be remediated through the application of SUNSORB (or any similar product). All contaminated material shall be temporarily stored and removed from site, designated as hazardous waste.	• Minimise scaring of the soil surface and land features • Minimise disturbance and loss of soil • Minimise construction footprint • Minimise sedimentation of nearby drainage lines • Maintain the integrity of topsoil's for future landscaping and rehabilitation • Containment of invasive plant growth • Ensure storm water system is functioning optimally • Address all exposed areas susceptible to erosion promptly to prevent the loss of valuable soil	• No visible erosion scars once construction is completed • The footprint has not exceeded the proved development site. • Minimal invasive weed growth • No signs of sedimentation and erosion • Method statement • No visible and/or detected signs of environmental degradation as a result of erosion on site; • No detected signs of significant contamination of soil • No visible and/or detected signs of reduced quality of surface water entering the watercourse delineated • No visible and/or detected signs of ecological degradation of the watercourse delineated.	• As and when required. Monitor daily.	• Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
D14 REHABILITATION				
i. Rehabilitation shall ensure that all areas disturbed by the construction activity to return these areas to a near as possible natural state (similar or better state than before construction occurred). ii. On completion of the construction works, the Contractor shall clear away and remove from the site all construction paint, surplus materials, foundations, plumbing and other fixtures, rubbish and temporary works of every kind. iii. Areas cleared shall be graded and scarified to restore the ground to its original profile as near as practicable before topsoil placement, where after mulched material will be spread in order to ensure recovery of the natural vegetation cover. iv. Rehabilitation includes, but is not limited to, the following activities: • Removal of all contaminated soil by hydrocarbons (regarded as hazardous waste), by excavating to the depth of contaminant penetration and removal to a facility registered for the disposal of hazardous materials. Safe disposal certificates to be obtained for removal of hazardous materials. • Clearance and legal disposal of all rubble and construction waste associated with the development (unused materials including spoils, waste concrete and cement, concrete and cement wash water, litter etc). • Backfilling and contouring. • Ripping of compacted disturbed areas to a depth of 250 mm prior to the replacement of topsoil. • The eradication of invasive floral species that may have promulgated on the site due to construction activities. v. Rehabilitation must be undertaken at all areas disturbed by the works and site camp as specified by the ECO and/or PM. vi. Rehabilitation of all disturbed areas shall be conducted to the satisfaction of the PM and the ECO. vii. Rehabilitation, landscaping and/or revegetation must commence once works are complete in a particular area and acceptable groundcover (80% is an accepted standard in practise) must be achieved within 3 months. viii. Access roads and other areas compacted by vehicles during construction must be scarified in order for plant roots to penetrate the soil and in effect promoting the restoration of natural vegetation.	• Rectify any adverse aspects occurring during construction • Maintain the integrity of topsoil's for future landscaping and rehabilitation • Containment of invasive plant growth	• No visible signs of affected areas (contaminated soils, erosion, compacted areas, etc.) • Minimal invasive weed growth • No signs of sedimentation and erosion • Method statement	• Daily once rehabilitation is initiated.	• Developer/ Abattoir Owner • Contractors • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
D14 REHABILITATION				
ix. Rehabilitation must be monitored in order to determine if methods implemented are successful. Where it is found that methods are not successful, the Contractor will continue to rehabilitate the areas using alternate methods until such time that the PM and ECO are satisfied. The cost of prolonged rehabilitation and alternate methods must be negotiated between the Contractor and the Developer. x. Any contaminated soil is to be removed and disposed of at an appropriately permitted landfill site in accordance with the acceptable methods prescribed for the particular waste class and hazard rating, as prescribed by DWA's Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste, Second Edition (1998).	• Rectify any adverse aspects occurring during construction • Maintain the integrity of topsoil's for future landscaping and rehabilitation • Containment of invasive plant growth	• No visible signs of affected areas (contaminated soils, erosion, compacted areas, etc.) • Minimal invasive weed growth • No signs of sedimentation and erosion • Method statement	• Daily once rehabilitation is initiated.	• Developer/ Abattoir Owner • Contractors • ECO • ESO

Table 7: Management Table and Mitigation Measures for General Aspects during the Operational Phase of the Development

PHASE OF DEVELOPMENT	OPERATIONAL
IMPACT / ISSUE	GENERAL
SECTION	E

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
E1 SITE MANAGEMENT				
i. All transformers must be bunded. Waste refrigeration oil must be disposed of through reputable waste contractors and the legal handling thereof must be verified. ii. The owner must appoint a designated (competent) person to act as ESO, who will *inter alia* be responsible for the implementation of the EMPr and sound environmental management during the operational phase. The manager would be a good candidate to fulfil the role of ESO for Operation. iii. A maintenance plan for the development must be developed with regard to maintaining buildings and perimeter fencing etc. in order to ensure that they do not deteriorate and become aesthetically unpleasant. iv. Environmental accountability must be included in any purchase contracts, thereby controlling activities to be undertaken. v. Activities on the site must be in line with the current environmental legislation. To this end, all applicable legislation must be identified and documented with reference to the abattoir's activities and environmental impacts. vi. Total sealing of paved areas such as parking lots, driveways, pavements and walkways should not be permitted. Permeable material should rather be utilized for these purposes to minimise runoff. vii. A row of trees should be planted on the boundaries of the site to assist with the lowering of noise impacts derived from the abattoir viii. The facility should also adhere to the guidelines of the Occupational Health and Safety Act, 1993 as well as to the Environmental Regulations for Workplaces, 1987; Facilities Regulations, 1990; and the General Administrative Regulations, 2003.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
E2 EROSION, SEDIMENTATION AND FLOODING				
i. The stormwater management system must be regularly monitored and maintained (e.g. check for erosion of soil); especially any discharge and damaged areas must be repaired if and when required. No substances other than uncontaminated rainwater may be channelled via the stormwater drainage system. ii. No litter may block the storm water system and it should be ensured that excess sedimentation of the grassed drainage areas is cleared to prevent blockages. iii. If soil compaction occurs – rip compacted areas to improve infiltration, reduce runoff and ease of landscaping. Areas of high traffic use are to be compacted / paved.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
E3 GROUNDWATER QUALITY				
i. The slurry dam wall (if relevant) should be well lined i.e. impermeable. Inspect slurry dam walls for signs of leakage and repair/maintain as when necessary. Remove sludge when build-up is approximately half the total volume of the dam. Depending on the quantity and quality of the slurry, all slurry (and other dirty water) dams must be licensed by DWA. ii. All French drains are to be monitored and maintained so as not to cause soil or groundwater contamination in accordance with Regulation 49 of GN399 of the National Water Act of 1998 (general authorisation applicable to disposal of domestic wastewater).	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
E4 WATER SUPPLY, USAGE AND EFFLUENT DISPOSAL				
i. Inspect the site for burst, blocked or leaking water pipes. ii. Water use management programs to be designed & implemented to conserve water. iii. An adequate supply of hot water as stipulated in the Regulations to the Meat Safety Act 40 of 2000. The water must also meet any other standards and conditions which the Director: Veterinary Services may lay down iv. Minimisation of waste volumes, water conservation and optimum water housekeeping are essential. A water balance is therefore required to detect water losses. Water may not be re-circulated without the consent of the Chief Meat Hygiene Officer. v. Most abattoirs discharge (after appropriate pre-treatment) to municipal sewers. Records must be kept for compliance with the municipal by-laws for the effluent. vi. Drainage of effluent discharging equipment including hand-wash basins sterilizers and boot washes must not occur across floors in traffic zones.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
E4 WATER SUPPLY, USAGE AND EFFLUENT DISPOSAL (CONTINUED)				
vii. Care must in all cases be taken to avoid contamination of natural streams and water sources with waste water and effluent. viii. Water used for general washing must be pressurized. If the cost of pressurising is too high, overhead header tanks to improve water pressure must be used (SANS 042). ix. All hoses must be fitted with self-closing nozzles to prevent wastage when not in use. Where the hoses are in frequent use, pistol grips must be used, whereas pressure sensitive rubber nozzles must be used in areas on intermittent use. x. All flexible hoses used for washing purposes must be in a leak free condition. xi. If a spillage occurs from the on-site Waste Water Treatment Works, this should be cleaned using an appropriate spill kit and the contaminated soils/ materials removed from site and disposed of at an appropriate registered landfill site, licensed to do so. xii. The use of grey water can drastically reduce the amount of white water required by the project and the following is recommended: • Water from hand basins, showers and washing machines should be captured and redirected to flush toilets. • If grey water from basins, showers, washing machines or kitchens is to be used for irrigation, all detergents used must be 100% biodegradable to prevent negative impacts on the environment. • Rainwater can be captured by fitting tanks to roof gutters and the water can be used for either irrigation or flushing of toilets. • Grey water (excluding rainwater) should be used immediately to prevent contamination by algae or bacteria.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
E5 SEWAGE SERVICES				
i. The sewage system must be inspected for leakages on a regular basis and any leakages must be attended to immediately. ii. French drain system should go through a septic tank system for biodegrading (if applicable).	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
E6 WASTE MANAGEMENT				
i. Subject to compliance with the municipality's refuse removal by-laws, the local council or an independent company must undertake disposal of all domestic waste. The abattoir must audit this to ensure safe disposal.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO & ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
E6 WASTE MANAGEMENT (CONTINUED)				
ii. The abattoir must have the facilities to manage its respective solid and liquid waste streams on the premises. Should they not have these on-site, contractual agreements with external service providers must be in place to ensure that their wastes can be disposed of in a sustainable manner at an appropriate rendering facility. iii. Waste material should be stored in an appropriate storage area that is clearly demarcated. iv. Waste material should not be allowed to remain on site for prolonged periods of time and under no circumstances should waste be landfilled on site. v. Solids traps consisting of three compartments must be installed in all drains (except closed systems) to collect these waste products. The municipality must approve the plans for any drainage installations, including solids traps. vi. There must be a full examination of process by-products and wastes to identify options for waste minimisation. All wastes (e.g. solid animal wastes, liquid animal wastes or domestic wastes) must be classified and rated with a view to determining the appropriate disposal methods, as prescribed by DWA Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste, Second Edition (1998). vii. Litterbins with tight-fitting lids must be placed at strategic points within the abattoir, to be determined during the initial design phase and implemented during the operational phase. The labelling and signage requirements for refuse receptacles and on-site waste storage areas imposed by GN R3505 to the Meat Safety Act of 2000 must be observed. viii. Cold water must be used to clean surfaces soiled with blood (except periodic deep cleaning at the end of the day) as the use of hot water causes congealing of the blood, making cleaning more difficult, and results in unnecessary wastage of water. ix. The use of squeegees on offal trays to remove the paunch contents off the trays is strongly recommended. The use of sloped continuous sliding trays is advocated as it reduces the water needed for final wash-down. The use of square trolley type trays is not recommended, as they require excessive amounts of water for solids removal. x. Subject to municipal consent, solid and grease traps must be installed downstream of effluent sources to separate gross solids and fats from all effluents prior to discharge.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
E6 WASTE MANAGEMENT (CONTINUED)				
xi. General areas of waste management improvement must include: • minimisation of waste generation at source (including maximising the recovery of useful materials), • seriously curbing the practice of washing solids into drains by using solid traps (which transfers waste solids to the liquid medium), and • promoting research into cleaner technology and recovery of higher value products from the waste stream.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
E7 ATMOSPHERIC POLLUTION				
i. External dustbins must be cleaned at least once a week in a maintenance plan for the abattoir to prevent odours. ii. Ensure that the garbage (household/general waste) is collected on a regular basis to reduce the presence of vermin and flies and reduce odours. iii. All chemical storage areas and chemical-based odour control equipment must be located on impermeable concrete floors with bunding capable of containing 110 % of any spillage. **Animal holding pens and sale yards** iv. Manure must be removed daily from the holding areas, and then washed down using low volume high-pressure sprays. This reduces odours and fly-breeding. **Effluent treatment plants** v. During commissioning, odours produced by anaerobic waste treatment ponds must be reduced by: • allowing some grease and manure solids to pass through the primary treatment system, establishing a crust of 100 mm thick on the surface; • layering of hay on the surface of the anaerobic pond; and • using an artificial cover (such as plastic) that breaks down over time and mixes with the fat on the surface. vi. Effluent treatment plants must be adequately designed, operated and maintained to minimise emission of odours. **Dust and Feathers** vii. Fabric filter type dust collectors must be used for dust control. viii. Surfaces of holding areas, unsealed roads and parking areas must be sealed. ix. Filtered ventilation hoods must service dusty process operations.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
E7 ATMOSPHERIC POLLUTION (CONTINUED)				
x. Warehouses must use good housekeeping to alleviate dust generation. Dry materials, must be handled in such a manner as not to give rise to dust emissions to the atmosphere.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
E8 STORM WATER MANAGEMENT				
i. An appropriate storm water management plan to be developed and implemented in the operational phase. ii. Nothing other than uncontaminated rainwater is allowed to enter the storm water system. iii. Isolated unloading areas, holding areas and processing plant must be roofed so to reduce storm water contamination. iv. Storm water must be kept away from the contaminated areas and directed to the storm water drainage system.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
E9 TRAFFIC AND ROAD INFRASTRUCTURE				
i. Engagement with the local municipality is essential to seek out collaborative projects for the improvement of local road infrastructure. ii. The major intersections and feeder roads along the route to the abattoir needs to be assessed and areas need to be identified for upgrades. iii. All vehicles to be making deliveries or picking up material should adhere to speed limits on domestic roads. iv. All on-site equipment must be kept in good working order. v. Pick-ups and deliveries should be restricted to working hours (8:00 to 17:00).	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
E10 RECYCLING				
i. Subject to the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste, Second Edition (1998), composting of paunch contents in pits and lined bunkers can be an efficient and economical form of disposal as long as offensive odours are not generated. **Best Practice** ii. Manure nutrients should be recycled for use in crop and pasture production.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
E11 OCCUPATIONAL HEALTH, SAFETY AND TRAINING				
i. All relevant aspects of the Occupational Health and Safety Act, No 85 of 1993 are to be implemented.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
E12 TRAINING				
i. The abattoir owner must undertake training of employees to make them aware of the EMPr for the abattoir. All staff needs to be advised that if they fail in their duties, they are just as liable to prosecution and penalty as is their employer in terms of several bodies of legislation (e.g. Schedule 3 of NEMA). ii. Training programs must contain common elements such as familiarisation with the company environmental policy and commitment to waste prevention, recycling and raw materials conservation. Employees must be encouraged to suggest new ideas. iii. Skills development opportunities should be granted to community members and local job seekers, where needed. iv. Training should be concentrated on skills that can be readily transferred to other employment opportunities in the local area to avoid persons with trained skills leaving the area for work elsewhere	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
E13 CONDEMNED MATERIALS				
i. The abattoir owner and/or manager is responsible for complying with the legal requirements or conditions relating to the safeguarding and disposal of any carcass, part thereof or any edible product which cannot be passed for human or animal consumption e.g. Meat Safety Act, 2000 (Act No. 40 of 2000)., etc.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
E14 SOCIAL AND LABOUR				
i. Unskilled and unemployed labour should be sourced from the surrounding local communities as far as possible. ii. Project contracts between the applicant and the specialist contractor should stipulate the use of local labour for unskilled and semi-skilled positions and tasks. iii. Ensure that local businesses, especially those of Historically Disadvantaged Individuals (HDI), women and of SMMEs get allocated the maximum appropriate share of project related business opportunities.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
E14 SOCIAL AND LABOUR (CONTINUED)				
iv. Ensure that the Labour Relations Amendment Act, 2002 (Act No. 12 of 2002) as well as the necessary policies and procedures are taken into consideration to ensure the correct procurement procedures. v. Recruit and train local residents to supply unskilled labour during the abattoir construction. vi. Stakeholders should be mutually accountable for increased opportunities regarding skills and competency development (general education and technical training).	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO

Table 8: Management Table and Mitigation Measures for the Holding Area during the Operational Phase of the Development

PHASE OF DEVELOPMENT	OPERATIONAL
IMPACT / ISSUE	HOLDING AREA
SECTION	F

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
F1 WATER SUPPLY, USAGE AND EFFLUENT DISPOSAL				
i. All water intakes, whether from mains supplies or other sources, must be metered and all water intakes must be routinely recorded either manually or automatically. It is recommend that 2 water meters be used, namely for the main water intake and process water. ii. Management must not be content with merely installing water meters, but must ensure that the results are obtained and monitored for each process by regular record keeping.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
F2 WASTE MANAGEMENT				
i. All holding areas must be squeegeed and/or dry swept to remove gross solids prior to washdown. The sweepings must be collected for disposal and must not be flushed to drains. **Liquid wastes process** ii. Bleeding troughs must be provided with a drip tray to prevent excessive amounts of blood from entering the drainage system. Alternatively, a separate drain must be built under the slaughter area, sloped back to the blood trough, so that excess blood can be recollected in the blood trough. Pipes from the blood trough must be diverted to a container on the outside of the building and must not be connected to the effluent system. Blood must not be dumped informally. iii. Plastic trays must not be used as bleeding troughs or blood containers. Suitable acid resistant materials must be used for bleeding trough construction. **Solid waste process** iv. The use of a squeegee on offal trays to remove the paunch contents is strongly recommended. v. The use of any sludge (from septic tanks. etc.) by irrigation or any other method of dispersal with the aim of increasing soil fertility or any other aim is not permitted.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
F2 WASTE MANAGEMENT (CONTINUED)				
vi. In terms of the Department of Health's, "permissible utilisation and disposal of sludge[1]", a contractual agreement must be signed between "all individuals and authorities responsible for handling a particular sludge from the place it is produced" (abattoir) "to the area where it is utilised or disposed of". vii. Paunch contents must not be dumped informally.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
F3 EFFLUENT MANAGEMENT				
i. All holding areas must be squeegeed and/or dry swept to remove gross solids prior to washdown. This reduces the effluent generation. ii. The use of drain covers must only be considered as a safety measure and must not be used as a "solids trap". iii. Effluents from the holding areas must not be discharged in municipal sewers unless the local municipality grants permission. If no municipal sewage connections are available, the discharge of such effluents must be to impermeable lined pits subject to authorisation in terms of the National Water Act of 1998. Discharge to the natural environment is unacceptable. iv. All abattoirs must have a letter of consent from the relevant authorities. v. Holding areas must have well drained manure slabs for manure storage prior to removal, except if manure is removed directly into a vehicle.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
F4 CONDEMNED MATERIAL				
i. All "dead on arrival" and "dead in pen" animals must be disposed of as condemned material in terms of Part VIII of GN R 3505 to the Meat Safety Act. ii. No carcass or part thereof that has been condemned may be brought into any part of the abattoir containing edible products. iii. Condemned carcasses, portions thereof or any edible products in an abattoir, which cannot be passed for human or animal consumption, must be: • portioned and placed in a theft proof container which has been clearly marked "CONDEMNED", in letters must not be less than 10 cm high, or conspicuously marked with a stamp bearing the word "CONDEMNED", using green ink;	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO

[1] Sludge is the sediment resulting from treating waste or sewage

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
F4 CONDEMNED MATERIAL (CONTINUED)				
• kept in a holding area or a room or dedicated chiller provided for the purpose, except if removed on a continuous basis; and • removed from the abattoir at the end of the working day or be secured in a dedicated chiller or freezer at an air temperature of not more than minus 2°C.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO

Table 9: Management Table and Mitigation Measures for Processing (Clean & Dirty) during the Operational Phase of the Development

PHASE OF DEVELOPMENT	OPERATIONAL
IMPACT / ISSUE	PROCESSING (DIRTY & CLEAN)
SECTION	G

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
G1 EFFLUENT MANAGEMENT				
i. Solid wastes must be prevented from entering the drainage system. All areas must be swept/squeegeed dry prior to wash-down of floors, walls, etc. ii. Water use should be minimised to reduce the effluent volume requiring handling and disposal. iii. Fat, meat, feathers and blood from carcass trimming must be dry-swept, collected, and passed to suitable solids handling and disposal facilities rather than being flushed to drain. iv. Where no other options exist, discharge of effluent to the municipal sewage works may be tolerated subject to authorisation from the municipality. If no other option exists but to discharge to the natural environment, such effluent must then be discharged to impermeable lined evaporation or treatment ponds subject to a DWA Water Use License issued under the National Water Act of 1998. v. Waste water may be considered for irrigation but permission from DWA, DEA and DoH (local/national authority) must be sought. vi. No irrigation must take place during times of high rainfall. vii. Drains must be installed in straight lines with as few joints as possible to reduce costs and the risks of leakage. Drain covers must be effectively secured. viii. Grease and solid traps with suitable grease removal facilities must be approved by the municipality and installed upstream of major collection sumps, to minimise the problem of grease removal from large volumes of effluent or plant items. ix. Effluent streams must be separated as far as possible to facilitate treatment, isolation or disposal. x. Effluent loadings and volumes must be established in order for monitoring purposes.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
G1 EFFLUENT MANAGEMENT (CONTINUED)				
xi. Dewatering screens must be used for the paunch contents. Similarly, drying beds similar to that used in sewage works may possibly be used to dewater paunch contents. Drying beds constitute "disposal sites" by legal definition and as such require a Waste Management License under the National Environmental Management: Waste Act, 2008.. xii. Where no other options are available, the use of properly designed septic tanks must be considered to pre-treat the effluent generated as per authorisation of Municipality. Please note that the final flow from the septic tanks must be discharged to a municipal sewer line or septic tank and not to the natural environment	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
G2 CONDEMNED MATERIALS MANAGEMENT				
i. Condemned material must remain under strict control from the time of condemnation until they are disposed of in an acceptable manner. ii. No person may remove a carcass, part thereof or any edible product that has been detained or condemned from an abattoir, except with the permission of a registered inspector, who is a veterinarian and subject to such conditions as he or she may impose. iii. Facilities (e.g. separate freezers) must be available in the abattoir for the safekeeping of any carcass, meat, intestines or animal product that has been condemned by the veterinarian or provisionally detained by a meat inspector. iv. If a carcass, meat, intestines or animal product in an abattoir has been condemned by the veterinarian it must be dealt with as follows: • by incineration (burnt to ashes) at a licensed facility; • by denaturing. Once the condemned material has been cut into strips, these should be sprayed with or immersed in a solution of crude phenolic or cresolic acid, or another suitable disinfectant, and buried at a depth of at least 60 cm; • by processing in an approved sterilisation / rendering plant; or • by means of any other method that the Director: Veterinary Public Health may authorise. v. No condemned carcass, meat, intestines or animal product may be left at the end of a working day in any section of an abattoir meant for edible produce.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
G2 CONDEMNED MATERIALS MANAGEMENT (CONTINUED)				
vi. Since methods for dealing with condemned materials as stated above involve some logistical problems, it is advised that the abattoir must investigate whether the condemned product cannot be taken to a sterilisation installation. vii. If the veterinarian condemns an animal or carcass, meat, offal or animal product, he must provide the abattoir owner, on request, with a certificate describing the condemned product and giving the reasons for condemnation. viii. Sufficient theft, leak proof, lockable containers with tight fitting lids, complying with regulation 14 of the Meat Safety Act, must be provided to keep and transport condemned material which must be clearly marked "CONDEMNED". Containers must also be provided to collect and hold inedible material until disposal. ix. Facilities to collect and hold blood prior to disposal must be provided.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
G3 ROUGH OFFAL				
i. The following requirements must be followed for the washing of rough offal: Rough offal must be removed from the dressing room to the offal room directly adjacent and connected thereto, after being passed, where paunches and intestines are separated and emptied of its contents; washed with clean running water; and hung on hooks for cooling and drip drying before and during chilling. ii. Stunning, hoisting and bleeding areas must have facilities for collecting and storing of blood in closed containers prior to removal and disposal.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
G4 GENERAL WASTE MANAGEMENT				
i. Refuse containers must be provided for the collection of general refuse at various points on the premises. Areas where waste or refuse containers are kept prior to removal must be impervious, curbed and drained and the containers must be enclosed or fitted with tight fitting lids. ii. Equipment must be provided for the emptying of rumens and intestines and the ruminal and intestinal content must be removed continuously. iii. The owner of the abattoir must implement a Hygiene Management Program/System (HMP/S) (Refer to Table 10 below for HMP/S requirements)	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO

Table 10: Hygiene Management Program/System Requirements associated with an Abattoir

ACTIVITY/ ISSUE ASSOCIATED WITH THE HYGIENE MANAGEMENT SYSTEM (HMS) TO BE PROVIDED FOR	ACTION REQUIRED	RESPONSIBLE PARTY
HMS	(a) provide the provincial executive officer with a documented Hygiene Management System (HMS) containing detailed information on control measures or programs required to monitor identified control points, including the methods of monitoring or checking these control points, for approval; (b) provide relevant records of observations, checks, measurements or results; (c) provide sampling programs for laboratory analyses, as well as names of laboratories to do the required analyses; (d) provide written accounts of decisions relating to corrective actions when taken; and (e) assess the hygiene status of the abattoir by means of the Hygiene Assessment System (HAS) and provide results to the provincial executive officer for verification as frequently as he or she may require.	Abattoir owner/manager
Document management system	The document management system must provide for:- (a) the retrieval of documents relating to an identified slaughter batch; (b) the recording of each slaughter batch containing information regarding date of harvesting, mass, quantities, identification and destination for carcasses as well as cut meat; and (c) a documented product recall procedure approved by the provincial executive officer.	Abattoir owner/manager
Schematic plan of abattoir	A schematic plan of the abattoir must be available and must indicate:- (i) all the different areas on each level; (ii) all the different rooms in each area identified, indicating the process or operation including the capacities or rates of operation that take place in such rooms; (iii) the flow of the product; (iv) ancillary structures on the premises; (v) the required temperature as well as the capacity of each room where temperature is controlled; (vi) the different ablution facilities for workers in clean and dirty areas as well as the personnel entrances to the different areas; (vii) all entrances to rooms, areas and building; and (viii) boundaries, indicating entrances and exits to and from premises.	Abattoir owner/manager

ACTIVITY/ ISSUE ASSOCIATED WITH THE HYGIENE MANAGEMENT SYSTEM (HMS) TO BE PROVIDED FOR	ACTION REQUIRED	RESPONSIBLE PARTY
Flow diagram of slaughter process	A flow diagram of the process must indicate:- (a) all steps involved in the process, including delays during or between steps, from harvesting, receiving of the animals to placing of the end product on the market; and (b) details and technical data including equipment layout and characteristics, sequence of all steps, technical parameters of operations, flow of products, segregation of clean and dirty areas, hygienic environment of the abattoir, personnel routes and hygienic practices, product storage and distribution procedures.	Abattoir owner/manager
Potential hazards	The owner must prepare a list of all potential biological, chemical or physical hazards that may occur at each step of the process, including:- (a) unacceptable contamination or recontamination of a biological, chemical or physical nature; (b) unacceptable survival or multiplication of pathogenic micro-organisms; and (c) unacceptable production or persistence of toxins or other undesirable products of microbial metabolism.	Abattoir owner/manager
Prevention of hazards	The owner must prepare written hygiene control programs (HCP) to prevent, eliminate or reduce hazards to:- (a) ensure that control programs for each hazard is implemented; (b) establish critical limits for control points; (c) establish a monitoring or checking system for each control point; and (d) prepare written corrective actions that must be taken without hesitation when a deviation is observed and such corrective action must specify – (i) the persons responsible to implement the corrective action; (ii) the means and action required for each hazard; (iii) the action to be taken with regard to the meat having been processed during the period when the process was out of control; and (iv) that written record of measures taken must be kept.	Abattoir owner/manager
Hygiene control programs (HCP)	The owner of an abattoir must implement:- (a) a HCP for ante-mortem inspection, including control measures to:- (i) ensure that all animals (especially those) which for some reason or other cannot be processed into safe meat are identified and handled humanely and appropriately; (ii) identify animals with diseases and conditions of which symptoms may not be visible during post-mortem meat inspections;	Abattoir owner/manager

ACTIVITY/ ISSUE ASSOCIATED WITH THE HYGIENE MANAGEMENT SYSTEM (HMS) TO BE PROVIDED FOR	ACTION REQUIRED	RESPONSIBLE PARTY
Hygiene control programs (HCP)	(iii) identify animals with highly contagious diseases or diseases controlled under the Animal Health Act, 2002 (Act No.7 of 2002); (iv) identify animals that pose a high contamination risk, and such as those with septic conditions or those that are excessively soiled; and (v) ensure that injured animals in obvious pain are sent through for emergency slaughter. (b) a HCP for slaughter and dressing, including:- (i) control measures (CM) to ensure that no contamination of meat and edible products occur from:- • the slaughter surface; • wind and dust; • the contents of any hollow organs; • persons working with edible products; or • contact with unclean objects; (ii) slaughter and dressing procedures which must limit any contamination to the absolute minimum; (iii) training of all workers in correct slaughter techniques including principles of hygiene practices which must be monitored; and (iv) a programme for the daily checking of carcasses for soiling to provide for regular checking of a representative sample of carcasses throughout the day on a random basis and to determine the levels of contamination of carcasses. (c) a HCP for meat inspection, in terms of which the supervisory registered meat inspector (SMI) assisted by the registered veterinarian must monitor meat inspection by means of implementation of written control measures to ensure:- (i) that meat inspection is done according to the regulations; (ii) the competency of the meat inspectors and meat examiners; (iii) the personal hygiene of the meat inspectors and meat examiners; (iv) that organs are correlated to the carcasses of origin until inspection is done; (v) the security of detained carcasses and organs; (vi) the security of provisionally passed carcasses and organs; (vii) the security of the stamp of approval; (viii) the security of condemned material; and (ix) the implementation of standard operational procedures (SOP's) for:-	Abattoir owner/manager

ACTIVITY/ ISSUE ASSOCIATED WITH THE HYGIENE MANAGEMENT SYSTEM (HMS) TO BE PROVIDED FOR	ACTION REQUIRED	RESPONSIBLE PARTY
Hygiene control programs (HCP)	• emergency slaughter; • preferential slaughter; • provisional slaughter; • dirty animals; and • dropped meat. (d) a HCP for personal hygiene of workers in terms of which:- (i) a general code of conduct, approved by a registered inspector, for personnel and in particular for workers who come into direct contact with meat and edible products, must be available; (ii) a training program, as well as registers of attendance, for all personnel to apply the principles of the code of conduct referred to in subparagraph (i) must be available; and (iii) records of surveillance and supervision including records of disciplinary action in cases of repetitive misconduct or non-compliance must be available. (e) a HCP for medical fitness of workers in terms of which:- (i) records of initial medical certification that workers are fit to work with meat and edible products, prior to employment, must be available; and (ii) records of daily fitness checks, including corrective actions applied in cases of illness and injury, must be available. (f) a HCP for sterilizer temperatures and maintenance of sterilizers in terms of which control measures to ensure the continuous availability and accessibility of sterilizers in good working order at temperatures of 82 ºC, including registers for daily checks indicating frequency of checks as well as corrective action procedures in cases of non-compliance, must be available. (g) a HCP for the availability of liquid soap and soap dispensers, toilet paper, and disposable towels, in terms of which control measures to ensure the continuous availability and accessibility of liquid soap and soap dispensers for hand-washing purposes, toilet paper and disposable towels at pre-identified points must be available. (h) a HCP for sanitation and continuous cleaning including a cleaning schedule providing:- (i) a list of all the areas to be cleaned; (ii) a list of all the rooms that have to be cleaned within every area; (iii) the name of the person responsible for the cleaning of each area, section or room; (iv) for each room within a particular area, a detailed description of the cleaning of each structure, including:-	Abattoir owner/manager

ACTIVITY/ ISSUE ASSOCIATED WITH THE HYGIENE MANAGEMENT SYSTEM (HMS) TO BE PROVIDED FOR	ACTION REQUIRED	RESPONSIBLE PARTY
Hygiene control programs (HCP)	• the frequency of cleaning; • step by step methods of cleaning; • data of the chemicals which are used, such as registration data, safeness, dilutions, application prescriptions; • the correct application of the detergents such as dilution, temperatures and contact times; • the rinsing off of applied chemicals; and • the results to be obtained as an objective of the cleaning programme. (v) an addendum for each room in which the cleaning of each structure must be described in detail including aspects such as method, frequency and target results; (vi) for the training of cleaning teams in the execution of these programs; (vii) for control over the storage of detergents to prevent contamination of edible products; (viii) a detailed description for continuous cleaning on the processing line during processing, which must include:- • a list of all the actions in this program including the cleaning of moving equipment and crates; and • a step by step description of each action. (ix) for these programs to be approved by a registered inspector; and (x) for laboratory checks as control of affectivity of the cleaning programs to be instituted and documented. (i) a HCP for availability and quality of water in terms of which:- (i) the owner of the abattoir must account for the source of water supply and the status of such water; (ii) the owner must be able to demonstrate the water distribution system within the abattoir and provide an updated schematic plan of the water distribution on the premises; (iii) a sampling program must be followed to ensure that all outlets, including water hoses are checked on a repeated consistent basis within an allotted period of time, and the sampling procedure must be described; and (iv) the owner is responsible to ensure that water used in the abattoir is potable and that records of microbiological and chemical water test results are available. (j) a HCP for vermin control in terms of which the owner of the abattoir must provide a written control program for each vermin type, and such program must include:- (i) schematic drawings indicating the position of bait stations; (ii) a poison register, including specifications for the use of different poisons; and	Abattoir owner/manager

ACTIVITY/ ISSUE ASSOCIATED WITH THE HYGIENE MANAGEMENT SYSTEM (HMS) TO BE PROVIDED FOR	ACTION REQUIRED	RESPONSIBLE PARTY
Hygiene control programs (HCP)	(iii) training programs for persons working with poisons. (k) a HCP for waste disposal, including condemned material, in terms of which:- (i) the owner of the abattoir must provide a written control program for the removal of each different category of waste material including general refuse removal; and (ii) security arrangements to prevent condemned material from entering the food chain must be described. (l) a HCP for in contact wrapping and packing materials in terms of which:- (i) the owner of the abattoir must provide a written control program addressing the suitability as well as the storage and handling of all in contact wrapping and packing material; (ii) control measures to prevent contamination in store rooms must be provided; and (iii) control measures to prevent contamination of wrapping materials must be provided. (m) a HCP for maintenance, providing for the owner of the abattoir to provide a document addressing the routine maintenance of all equipment and structures; and (n) a HCP for thermo control in terms of which:- (i) a map must be provided that indicates the layout of all the chillers, freezers and processing rooms where temperature control of the rooms is required including:- • each temperature controlled room or area; • the number of the room or area; • the temperature requirement of each room; and • the throughput of each room; (ii) each room must be equipped with a recording thermograph, or equivalent means of monitoring and recording must be used, that indicates the temperature measurements in the room on a continuous basis; (iii) the graphs or data must provide the actual time and temperature as well as the correct date; (iv) annual calibration and certification to this effect must be available; (v) records in respect of regular testing of digital thermographs and meters against a certified fluid in glass thermometer, done by the owner, must be available; (vi) placing of the thermo-sensors within rooms must be representative of the temperature in the room; (vii) if a centralized computer system is used for this purpose all the relevant temperatures must be recorded on an ongoing basis at least every 30 minutes; (viii) the temperature status of every room must be checked at least every 12 hours by the owner to ensure maintenance of temperatures and all deviations must be accounted for;	Abattoir owner/manager

ACTIVITY/ ISSUE ASSOCIATED WITH THE HYGIENE MANAGEMENT SYSTEM (HMS) TO BE PROVIDED FOR	ACTION REQUIRED	RESPONSIBLE PARTY
Hygiene control programs (HCP)	(ix) checks by the owner must be recorded on the temperature control records; (x) any deviations from the required temperature must receive immediate corrective attention; (xi) the hygiene manager must be notified immediately in every case where a temperature breakdown has occurred; (xii) records must be available for inspection by the national executive officer or provincial executive officer; and (o) the hygiene manager must indicate daily control checks by way of signature on the records.	Abattoir owner/manager

Table 11: Management Table and Mitigation Measures for Storage and Transport of Waste during the Operational Phase of the Development

PHASE OF DEVELOPMENT	OPERATIONAL
IMPACT / ISSUE	STORAGE & TRANSPORT OF WASTE
SECTION	H

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
H1 ABATTOIR CONDEMNED MATERIAL TRANSPORTATION				
i. A vehicle used to transport condemned material must meet the following requirements: (i) the freight section must be completely covered and be capable of being locked and sealed; (ii) the inside lining must be watertight and made of smooth metal; (iii) the floor must form a unit with the bottom of the sides and the door must be made in such a way that the leakage of fluids from the freight section is prevented; and (iv) the floor must be provided with an outlet pipe at its lowest point, which can be tightly closed with a screw valve. ii. The freight space of a vehicle, which has transported condemned material, must be effectively cleaned and disinfected at the end of each day's work in a place specially equipped for the purpose. iii. Abattoir must transport their waste to a rendering facility for destruction where this is financially feasible. An emergency plan for accidental spillage in transit must be provided by the abattoir. The "Duty of Care" principle applies. iv. All trailers/tankers must be licensed and kept roadworthy at all times to minimise the risk of spillage while in transit as per the Hazardous Substances Act, 1973 (15 of 1973).	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
H2 OTHER ABATTOIR WASTE TRANSPORTATION				
i. A vehicle used for the transport of condemned material may not be used for any other purpose, but after cleaning and disinfection the vehicle may be used for the transport of inedible material. ii. A vehicle may only be used for the transport of condemned material if the:	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
H2 OTHER ABATTOIR WASTE TRANSPORTATION (CONTINUED)				
• load space is lockable, theft proof and sealable; • internal surface is leak proof and constructed of durable material; and • floor is provided at its lowest point with a drain pipe capable of being securely closed by a screw valve. iii. The load space of a vehicle used for transporting material to a sterilizing plant must be cleaned and disinfected to the satisfaction of a registered inspector at the end of each delivery under seal/Red cross permit at a place specifically constructed for the purpose.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO
H3 STORAGE AREAS				
i. Separate rooms must be provided for: • Handling and holding of hides, skins, feathers, hair and inedible material prior to removal; • Handling and holding of skin-on heads and feet; and • A room where paunches and intestines are emptied, washed and kept. • An abattoir must have a facility where livestock transport vehicles can be sanitized after off loading.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the operational phases.	• Ongoing	• Developer/ Abattoir Owner • ECO • ESO

Table 12: Management Table and Mitigation Measures for the Decommissioning Phase of the Development

PHASE OF DEVELOPMENT	DECOMMISSIONING AND CLOSURE
IMPACT / ISSUE	DECOMMISSIONING AND CLOSURE
SECTION	I

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PERSON
I1 OVERALL REQUIREMENTS				
i. The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act, 1993 (Act No.85 of 1993) and the National Building Regulations. ii. On closure and decommissioning of the abattoir, all infrastructure is to be removed. All rubble is to be removed frequently and disposed of in a licensed landfill site. iii. A soil contamination analysis is to be completed where units were demolished. Should the soil be contaminated, it must be removed and disposed of at registered landfill. The soil must be replaced and rehabilitated. iv. The cleared site after decommissioning is to be graded and scarified to restore the ground to its original profile as near as practicable before topsoil and vegetation is replaced. v. Refer to the management measures under "Construction Phase", applicable sections should be implemented.	• To limit the potential impacts through proper management.	• Decrease in corrective actions needed during the decommissioning phases.	• Ongoing	• Developer/ Abattoir Owner • Contractors • ECO • ESO

SECTION 4: ENFORCEMENT, AUDITING & MONITORING

4.1 AUDITING AND MONITORING

The implementation of the provisions and/or management measures contained in the EMPr will be subjected to monitoring and review to ensure compliance. Reference is made to routine monitoring to verify, assess and report on compliance with the relevant provisions of the EMPr, according to a set performance criteria, provided for in this EMPr. Attention should specifically be given to the monitoring of aspects related to the bio-physical, cultural/heritage and social environment(s).

The ECO must conduct, (at a frequency as determined by the Department and stipulated in the relevant EA, or at the discretion of the PM where no frequency is prescribed) independent environmental audits on the requirements of the EMPr and the EA. Specific tasks and responsibilities of the ECO will include:

- Compile for approval by the competent authority an audit checklist based on the management measures and conditions of the EMPr and EA issued;
- Compliance site inspections (at the predetermined frequency) to verify and assess compliance with the relevant provisions of the EMPr and EA issued;
- Verify site environmental documentation during inspections/audits; and
- Compile environmental compliance assessment reports (audit report) following the site inspections, for submission to the applicant/client, project manager, ESO, main/building contractor and the relevant competent authority (if directed to do so).

Evidence of the following as **key performance indicators**, must be included in the audit reports where required:

1. Complaints received from landowners and actions taken.
2. Environmental incidents, such as oil spills, concrete spills, etc. and actions taken (litigation excluded).
3. Incidents leading to litigation and legal contraventions.
4. Environmental damage that needs rehabilitation measures to be taken.

The ESO will be directly responsible to enforce compliance with the provisions of the EA and EMPr. The ESO should conduct routine monitoring for the duration of the pre-construction and construction phases of the development proposal. The ESO will report directly to the ECO and in consultation with the ECO, identify actions to ensure compliance and/or measures to remediate/rehabilitate environmental damage(s) caused.

Site documentation including a copy of all ECO monitoring reports (external monitoring), ESO monitoring reports (internal monitoring), contractor environmental method statements and pro forma documentation (see Section 2.5 & Section 2.6) must be held by the ESO on site and be made available to ECO and any other member of the Project Technical Team upon request. The ECO must verify Environmental Documentation during the independent environmental audits.

4.1.1 Non-Compliance

It may not always be possible to carry out the mitigation measures as stipulated in this EMPr which may result in future non-compliance. Penalties for non-compliance need to be discussed with the Contractor on appointment. The Contractor must make every effort to ensure that staff members comply with the EMPr, and enforce non-compliance penalties. Allowances must be made for the contractor to rectify all non-compliances, prior to issuance of penalties/fine.

The Contractor is deemed **NOT** to have complied with the EMPr if:

a. within the boundaries of the site, site extensions and haul/ access roads there is evidence of contravention of the EMPr confirmed and verified by the ECO;
b. environmental damage ensues due to non-compliance of EMPr requirements;
c. the Contractor/Abattoir Employees fails to comply with corrective or other instructions issued by the Developer/Abattoir Owner within a specific time, and
d. the Contractor/Abattoir fails to respond adequately to complaints from the public in line with requirements of this EMPr.

4.1.2 Measurement and payment

It is understood that environmental requirements included in this EMPr will entail costs over and above those of the civil requirements. These include, but are not limited to, the provision for:

- Mitigation and enhancement actions;
- Training and environmental awareness requirements;
- Monitoring;
- Auditing; and
- Corrective actions.

The proponent must recognise this and make provision for it in the budget allocations as well as the tender process. Costing for management action should be done with inputs and advice from appropriate technical members of the project team and relevant EAP who have knowledge of the management actions being recommended as well as practical experience in implementing similar measures and techniques.

A lump sum must be allocated for the management of “Environmental Specifications” where it is not possible to cost specifically for the requirements of the EMPr.

4.2 RECORD KEEPING

The following is list of documentation which must be held on site by and be made available to the Authorities and independent auditor on request:

1. A copy of the Environmental Authorisation (EA) and subsequent amendments (if issued);
2. Copy of the Environmental Management Programme (EMPr) and subsequent revisions;
3. Copies of the respective Principle Contractor’s Environmental Site Documentation / Environmental File (See Section 2.5 and 2.6);
4. Copy of specialist studies undertaken;
5. Records of all remediation / rehabilitation activities;
6. Complaints register and Incident register; and

7. Minutes of meetings.

These records must be kept with the Developer/Proponent at all times, even after construction has been completed. It is advised that all records are archived subsequent to final completion of construction for a period of not less than three (3) years; should there be any contentious matters raised.

SECTION 5: NATIONAL AND PROVINVIAL LEGISLATION, POLICIES AND GUIDELINES

The common list of legislative references contained herein is by no means exhaustive but is applicable to the general principals of this document as well as to activities associated with the proposed development.

5.1 APPLICABLE LEGISLATION

Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996).

The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996) has significant implications for environmental management. The main effects are the protection of environmental and property rights, the drastic change brought about by the sections dealing with administrative law such as access to information, just administrative action and broadening of the locus standi of litigants. These aspects provide general and overarching support and are of major assistance in the effective implementation of the environmental management principles and structures of the Environment Conservation Act, 1989 (Act No. 73 of 1989) [ECA] and NEMA. Section 24 in the Bill of Rights of the Constitution specifically states: Everyone has the right -

- To an environment that is not harmful to their health or well-being; and
- To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that;
    - Prevent pollution and ecological degradation;
    - Promote conservation; and
    - Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

National Environmental Management Act No. 107 of 1998

To provide for co-operative, environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state; and to provide for matters connected therewith.

National Environmental Management: Air Quality Act No. 39 of 2004

To reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto

National Environmental Management: Waste Act No. 59 of 2008

To reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; to provide for institutional arrangements and planning matters; to provide for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management measures; to provide for the licensing and control of waste management activities; to provide for the remediation of contaminated

land; to provide for the national waste information system; to provide for compliance and enforcement; and to provide for matters connected therewith.

National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)

The purpose of the Biodiversity Act is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed.

This Act is applicable to this application for environmental authorisation, in the sense that it requires the project applicant to consider the protection and management of local biodiversity. To this end, an ecological assessment is being undertaken to assess the flora and fauna on site.

National Water Act, 1998 (Act No. 36 of 1998).

The National Water Act, 1998 (Act No. 36 of 1998) (NWA) aims to provide management of the national water resources to achieve sustainable use of water for the benefit of all water users. This requires that the quality of water resources is protected as well as integrated management of water resources with the delegation of powers to institutions at the regional or catchment level. The purpose of the Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in responsible ways. The Act aims to regulate the use of water and activities, which may impact on water resources through the categorisation of 'listed water uses' encompassing water extraction, flow attenuation within catchments as well as the potential contamination of water resources, where the Department of Water Affairs (DWA) is the administering body in this regard.

Water Services Act, 1997 (Act No. 108 of 1997).

This Act refers to service provision to consumers such as water supply and sanitation; (whereas the National Water Act deals with water in its natural state).

National Heritage Resources Act, 1999 (Act No. 25 of 1999).

This Act legislates the necessity for cultural and heritage impact assessment in areas earmarked for development, which exceed 0.5 hectares and where linear developments (including pipelines) exceed 300 metres in length. The Act makes provision for the potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA).

Promotion of Access to Information Act, 2000 (Act No. 2 of 2000).

The Promotion of Access to Information Act, 2000 (Act No. 2 of 2000) recognises that everyone has a Constitutional right of access to any information held by the state and by another person when that information is required to exercise or protect any rights. The purpose of the Act is to foster a culture of transparency and accountability in public and private bodies and to promote a society in which people have access to information that enables them to exercise and protect their rights.

Promotion of Administrative Justice Act, 2000 (Act No. 3 of 2000).

This Act gives effect to the right to administrative action that is lawful, reasonable and procedurally fair. Its main purpose is to:

- Promote efficient administration and good governance; and

- Create a culture of accountability, openness and transparency in the public administration or in the exercise of a public power or the performance of a public function, by giving effect to the right to just administrative action.

Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
To provide for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.

Animal Health Act, 2002 (Act No. 7 of 2002)
The Act was instituted to provide measures for the promotion of animal health and for the control of animal diseases. The Act further regulates animal imports and exports, establishes animal health schemes and makes provision for further matters that may be connected with animal health.

Agricultural Product Standards Act, 1990 (Act No. 119 of 1990)
The purpose of the Act is to control the sale and export of selected agricultural goods or products, the sale of certain imported agricultural products and it provides for control over any other related agricultural products.

Meat Safety Act, 2000 (Act No. 40 of 2000)
The Act promotes meat safety and makes provisions for the establishment of abattoirs and specifies standards for the operation of abattoirs. Broiler-processing regulations published in Government Notice No. 153 of 24 February 2006 may be read in conjunction with the Meat Safety Act.

Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)
The OHS Act provides practical guidelines for the health and safety of workers as well as people in connection with plants and machinery. It also provides guidelines for the protection of people other than people at work against hazards that may arise out of a connection with the activities of persons at work. Together with the OHS Act, twenty-one other regulations have been published that outline specifications and requirements in different area which they govern. These regulations include health related regulations, general regulations, electrical regulations, machinery regulations, and specific regulations for certificates of competency, diving, explosives, major hazard installation and hazard work by children.

Other important acts which should also be consulted and may be relevant to the proposed development are:

Animals Protection Act No. 71 of 1962

Atmospheric Pollution Prevention Act No. 45 of 1965

Environment Conservation Act No. 73 of 1989

Fencing Act No. 31 of 1963

Hazardous Substances Act No. 15 of 1973

Health Act No. 63 of 1977

National Building Regulations and Standards Act 103 of 1977 (SABS 0400)

National Road Traffic Act No. 93 of 1996

Nature Conservation Ordinance No. 74 of 1979

Road Transportation Act No. 74 of 1977

5.2 APPLICABLE POLICIES AND GUIDELINES

Integrated Environmental Management (IEM).

IEM is a procedure for ensuring that environmental considerations are fully integrated into all stages of the development process. This philosophy aims to achieve a desirable balance between conservation and development (DEAT, 1992). The IEM guidelines intend encouraging a pro-active approach to sourcing, collating and presenting information in a manner that can be interpreted at all levels.

South African National Standards

Standards as published by the South African Bureau of Standards which focus on developing market-relevant national standards that are harmonised with international standards. These standards exist principally to provide a reliable basis on which common expectations can be shared regarding specific characteristics of a product, service or process. South African National Standards (SANS) are voluntary in that there is no obligation to apply them or to comply with them, except in those cases where their application is directly demanded by regulatory instruments or contractual obligations. They do however in most cases form a good reference for best practise measures to be implemented.

National Spatial Biodiversity Assessment, 2011

The National Spatial Biodiversity Assessment (NSBA) classifies areas as worthy of protection based on its biophysical characteristics, which are ranked according to priority levels.

Protected species – Provincial Ordinances.

Provincial ordinances were developed to protect particular plant species within predetermined provinces. The protection of these species is enforced through permitting requirements associated with provincial lists of protected species. Permits are administered by the provincial departments responsible for environmental affairs.

5.3 GENERAL GUIDELINES

The following measures provide guideline solutions to frequently anticipated issues on most development activities.

- The prevention of any site degradation due to non-compliance, administrative or financial problems, and inactivity during the construction phase, illegal activities, delays caused by archaeological finds, etc. is ultimately the responsibility of the applicant/developer. Section 28, National Environmental Management Act [NEMA] (Act No. 107 of 1998)
- The study area must be clearly defined, surveyed and fenced according to the project authorisation. All workforce members and other construction personnel are not to go beyond the fenced footprint
- Landowners are not comfortable when strangers come on to their properties. They will look for reasons to interfere with the construction process and may therefore cause delays in the process that can be very costly to the Contractor.
- The Contractors must adhere to agreed and approved access points and haul roads.
- No camping is allowed on any private property.

- Damage to private or public property such as fences, gates and other infrastructure may occur at any time. All damage to be repaired immediately and to the satisfaction of the relevant owner.
- Relevant landowners and businesses must be informed of the starting date of construction as well as the phases in which the construction shall take place.
- The Contractor must adhere to all conditions of contract including this EMPr.
- Proper planning of the construction process must be undertaken to allow for disruptions due to rain and very wet conditions.
- Where existing private roads to be utilised as access are in a bad state of repair, such roads' condition must be well documented, including photographs, before they are used for construction purposes. If necessary some repairs must be done to prevent damage to equipment and plant.
- All private and public manmade structures (as well as those earmarked to be preserved) on or near the project site must be protected against damage at all times and any damage must be rectified immediately.
- Proper site management and regular monitoring of site works should be undertaken.
- Proper documentation and record keeping of all complaints and actions should be taken.
- Regular site inspections to ensue and good control over the construction process throughout the construction period.
- A positive attitude towards Environmental Management by all site personnel must be motivated through regular and effective awareness and training sessions (see Section 2.2).
- A DEO, on behalf of the Contractor, is to be appointed to implement this EMPr. The PM and not the Contractor or his/her ESO is to deal with any landowner related matters (see figure 2)
- Environmental Audits to be carried out during and upon completion of construction; as well as during the operational phase of the development.

SECTION 6: DETAIL OF THE PERSON/S RESPONSIBLE FOR DEVELOPING AND REVIEWING THE EMPR

DETAILS OF THE INDEPENDENT ENVIRONMENTAL MANAGERS AND IMPACT ASSESSORS:

Strategic Environmental Focus (SEF) is an environmental consultancy that specialises in assisting the private sector and government in managing the sustainability of our natural resources. SEF has been proactively providing these sustainable solutions for over 15 years, with offices located across the major centres of South Africa, as well as offering global expertise through years of experience providing these sustainable solutions on many international projects. Persons at SEF which are involved in the project include:

ANDRIES OLIVIER *(PROJECT MANAGEMENT AND REVIEW)*

Andries a Project Manager at SEF who manages the Environmental Compliance Division, has been involved with Environmental Consulting for more than 6 years. He completed his B-Tech degree, Nature Conservation in 2005, and started his career as Environmental Control Officer in 2006. Andries has worked as an Environmental Officer in the construction industry for numerous companies including Stefanutti Stocks Civil Engineering. He has an entrepreneurial and social outlook with broad knowledge including environmental management systems, rehabilitation, waste management and extensive experience as a Compliance Auditor.

MANIE CILLIERS (*REPORT WRITING*)

Manie studied at the University of the North-West and completed his B.Hons in Environmental Sciences in December 2009 after obtaining his degree in B.Sc Botany and Geography. He started working at SEF from March 2010 and currently holds the position of Environmental Manager and Environmental Compliance Officer. He has extensive experience and knowledge of Environmental Management, Compliance Monitoring, Performance Assessments and Auditing. His scope of works further covers Liaising with Authorities, Compiling of Reports, Public Participation management of projects, and administrative work.

ANNEXURE 1: DECLARATION OF UNDERSTANDING BY THE DEVELOPER

I, _____

Representing _____

Declare that I have read and understood the contents of the Environmental Management Programme for:

Contract _____

I also declare that I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications for the aforementioned Contract.

Signed: _____

Place: _____

Date: _____

Witness 1: _____

Witness2: _____

ANNEXURE 2: DECLARATION OF UNDERSTANDING BY THE PROJECT MANAGER / ENGINEER

I, _____

Representing _____

Declare that I have read and understood the contents of the Environmental Management Programme for:

Contract _____

I also declare that I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications for the aforementioned Contract.

Signed: _____

Place: _____

Date: _____

Witness 1: _____

Witness2: _____

ANNEXURE 3: DECLARATION OF UNDERSTANDING BY THE CONTRACTOR

I, _____

Representing _____

Declare that I have read and understood the contents of the Environmental Management Programme for:

Contract _____

I also declare that I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications for the aforementioned Contract.

Signed: _____

Place: _____

Date: _____

Witness 1: _____

Witness2: _____

ANNEXURE 4A (SAMPLE): METHOD STATEMENT EXAMPLE

Contract No		**Date**		**CONTRACTOR DETAIL (Logo, physical address, etc.)**
Contract Name		**Rev**		

ENVIRONMENTAL METHOD STATEMENT

<ACTIVITY> e.g. SOLID WASTE MANAGEMENT

Scope

Short scope of the method statement in terms of the identified activity (Solid Waste Management) *<e.g. This method statement outlines the collecting, handling, classification, separating, storage and safe disposal of solid waste. Efforts should be made to eliminate or minimize waste in general, but if not possible, recycling, reuse or safe disposal shall be managed.>*

Relevant Legislation, Norms and Standards

All applicable Legislation, Norms and Standards relevant to the identified activity (Solid Waste Management)

National Environmental Management Act, 1998 (Act No. 107 of 1998);
National Environmental Management: Waste Act, 2008 (Act No. 58 of 2008);
Municipal by-laws pertaining to the Management of Waste;
National Domestic Waste Collection Standards GN 1475 in GG 32687 of 2009.11.06;
Draft National Standards for Disposal of Waste to Landfill GN 432 in GG 34414 of 2011.07.01;
Draft National Standards for Assessment of Waste for Landfill Disposal GN 433 in GG 34415 of 2011.07.01;
National Draft Waste Classification and Management Regulations GN 435 in GG 34417 of 2011.07.01;
National Draft Norms and Standards for the Storage of Waste GN 436 in GG 34418 of 2011.07.01;
SANS 10228 – Classification of dangerous goods;
DWAF Minimum Requirements for Waste Disposal by Landfill, 2nd Edition.

Introduction

Short Introduction *<e.g. I.Build Construction has been appointed by A Company (Pty) Ltd. for the construction of a new office block within the Silvercloud Node, Pretoria, Gauteng. Waste anticipated to be generated on site includes: General waste, builders rubble, Spoil material and hazardous waste.>*

Works, Management Actions, Control Measures

This section must be site specific. See example below

- Currently two waste baskets (constructed from wire mesh and enclosed by shade cloth) is present on site. These waste baskets are for the exclusive storage of general waste and shall be placed at strategic point on site where active works is taking place.
- All general waste is stockpiled at a designated area within the site office camp area. The stockpile is covered by a plastic sheet to deter windblown litter from occurring on site.
- Waste is removed to approved and registered municipal landfill sites by <sub-contractor detail>.
- Landfill sites to be used are <Landfill Site> <Registration number.
- A waste log shall be kept of the date, quantity and date of waste removed from site. The Site Agent shall be responsible for signing the waste register as confirmation of collection and disposal.
- Waste shall be separated into hazardous and non-hazardous waste streams.
- Hazardous waste shall be deposited in a dedicated, impermeable hazardous waste bin for later removal to a licensed hazardous waste facility.
- Red bins or red marked bins shall always be used for hazardous waste like oil filters, rags and bags of contaminated soil from cleared up spills.
- Safe disposal certificates shall be obtained for all hazardous waste removed from site.
- The certificates shall be kept on file.
- Employees shall be educated and made aware (toolbox talks) of not littering, waste separation and the importance of a waste management system.
- Waste shall never be buried, burned or dumped in unauthorized areas.

Declarations for Environmental Method Statement for <Activity>

1) ENGINEER / PROJECT MANAGER

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

Engineer/PM Approval	Date	Signature
John Doe		

2) ENVIRONMENTAL CONTROL OFFICER (ECO)

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

ECO Approval	Date	Signature
Joe Green		

3) CONTRACTOR

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

Contractor Approval	Date	Signature
Jack Civil		

ANNEXURE 4B (SAMPLE): METHOD STATEMENT TEMPLATE

Contract No		**Date**		
Contract Name		**Rev**		

ENVIRONMENTAL METHOD STATEMENT

Activity:

SCOPE

*Insert additional pages as required

RELEVANT LEGISLATION, NORMS AND STANDARDS

*Insert additional pages as required

INTRODUCTION

*Insert additional pages as required

WORKS, MANAGEMENT ACTIONS, CONTROLS

*Insert additional pages as required

DECLARATIONS FOR ENVIRONMENTAL METHOD STATEMENT:_____

1) ENGINEER / PROJECT MANAGER

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

Engineer/PM Approval	Date	Signature

2) ENVIRONMENTAL CONTROL OFFICER (ECO)

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

ECO Approval	Date	Signature

3) CONTRACTOR

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

Contractor Approval	Date	Signature

ANNEXURE 5 (SAMPLE): ENVIRONMENTAL INCIDENT REGISTER

ENVIRONMENTAL INCIDENT REGISTER					
Date	**Time**	**Location and Nature of Incident**	**Corrective Action Taken** (*Give details and attach documentation as far as possible*)	**Comments** *(Include any possible explanations for current condition and possible responsible parties. Include photographs, records etc. if available)*	**Signature**

ANNEXURE 6 (SAMPLE): COMPLAINTS REGISTER

COMPLAINTS REGISTER					
Date	**Time**	**Name & Contact details of lodger of Complaint**	**Location and Nature of Complaint** *(Include any possible explanations for current condition and possible responsible parties. Include photographs, records etc. if available)*	**Corrective Action Taken** (*Give details and attach documentation as far as possible)*	**Signature**