FINAL PRE-CONSTRUCTION & CONSTRUCTION
ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

for the

CONSTRUCTION OF THE SEWERAGE CONNECTION AND STORMWATER INFRASTRUCTURE FOR THE WEST END OFFICE PARK ON THE REMAINDER OF PORTION 259 AND PORTION 266 OF FARM ZWARTKOP 356-JR; AND HOLDINGS 231 AND 232, LYTTELTON AGRICULTURAL HOLDINGS, EXTENSION 1 IN CENTURION, CITY OF TSHWANE METROPOLITAN MUNICIPALITY, GAUTENG PROVINCE

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LIST OF ABREVIATIONS AND ACRONYMS

A.....Lead Authority
C.....Contractor
CE ..... Consulting Engineer
CLO..... Contractor's Liaison Officer
CoT ..... City of Tshwane Metropolitan Municipality
D..... Developer
DEA.....Department of Environmental Affairs
DWS ..... Department of Water and Sanitation
EAP .....Environmental Assessment Practitioner
ECO..... Environmental Control Officer
EMPr .....Environmental Management Programme
ESO.....Environmental Site Officer
GDARD .....Gauteng Department of Agriculture and Rural Development
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
OA.....Other Authority
PM..... Project Manager
RE .....Resident Engineer
SAHRA.....South African Heritage Resource Agency
SEF .....Strategic Environmental Focus
SHE..... Safety, Health & Environment
VIA ..... Visual Impact Assessment

GLOSSARY OF TERMS

- ***Alien Invasive Species*** - Plants and animals which do not occur naturally in an area - they may 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 Environmental Authorisation 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/programme 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 an organisation to improve its environmental policies and management systems and mitigate environmental impacts.
- ***Batching area*** - Site for the large-scale mixing and production of concrete or plaster, with associated equipment and materials.
- ***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.
- ***Bund*** - Enclosure under / around a storage facility to contain any spillage.
- ***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.
- ***Dolomite*** –A single mineral consisting of the chemical combination of calcium and magnesium carbonate ($CaMg(CO_3)_2$).
- ***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.
- ***Engineer*** - A person representing the Developer and who is responsible for the technical and contractual implementation of the works to be undertaken. This is usually the engineer, but may be any other person, such as an Architect or Project Manager, authorized by the Developer to fulfill this role.
- ***Environment*** - means the surroundings within which humans exist and that are made up of-
  (i) The land, water and atmosphere of the earth;
  (ii) Micro-organisms, plant and animal life;
  (iii) Any part or combination of i) and ii) and the interrelationships among and between them; and
  (iv) The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.
- ***Environmental Aspect*** - An environmental aspect is any component of a contractor's construction activity that is likely to interact with the environment.
- ***Environmental Authorisation*** – (Formally known as a *Record of Decision* [RoD]). A written statement from the relevant environmental authority, with or without conditions, that records its approval of a planned undertaking to build the accommodation facilities and other associated structures and infrastructure and the mitigating measures required to prevent or reduce the effects of environmental impacts during the life of a contract.
- ***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*** - An impact or environmental impact is the change to the environment, whether desirable or undesirable, that will result from the effect of a construction activity. An impact may be the direct or indirect consequence of a construction activity (Also see the definition for Impact).
- ***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 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.
- ***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".
- ***Interested and Affected Party*** - Refers to an interested and affected party contemplated in section 24(4)(d) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and which in terms of that section includes –
    - Any person, groups of persons, organization interested in or affected by an activity, and;
    - Any organ of state that may have jurisdiction over any aspect of the activity.
- ***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 (in this case; the Gauteng Department of Agriculture and Rural Development).
- ***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; and

- 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.
- ***No-Go Area*** - Areas where construction activities and construction personnel are prohibited.
- ***Over-utilisation*** - Over-using resources that affect the future use of the resource 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..
- ***Pollution*** - According to the National Environmental Management Act, No. 107 of 1998, pollution can be defined as, *"Any change in the environment caused by (i) substances; (ii) radioactive or other waves; or (iii) noise, odours, dust or heat emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future."*
- ***Process*** - Development usually happens through a process which refers to a number of planned steps or stages to be undertaken.
- ***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 that may equate 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.
- ***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.

Republic of South Africa. 1998. National Environmental Management Act 107 of 1998 (NEMA).

SECTION 1: CONTEXTUAL INFORMATION

1.1 INTRODUCTION

Strategic Environmental Focus (Pty) Ltd (SEF), as independent environmental managers and impact assessors, has been appointed by **Abland (Pty) Ltd,** on behalf of **West end Co-Ownership (West End Trust and Standard Bank Properties)** to compile and submit an Environmental Management Programme (EMPr) to the decision making authority, namely the Gauteng Department of Agriculture and Rural Development (GDARD); for the proposed construction of the sewerage connection and stormwater infrastructure for the **West End Office Park** on the Remainder of Portion 259 and Portion 266 of Farm Zwartkop 356-JR; and Holdings 231 and 232, Lyttelton Agricultural Holdings, Extension 1 in Centurion, City of Tshwane Metropolitan Municipality (CoT), Gauteng Province.

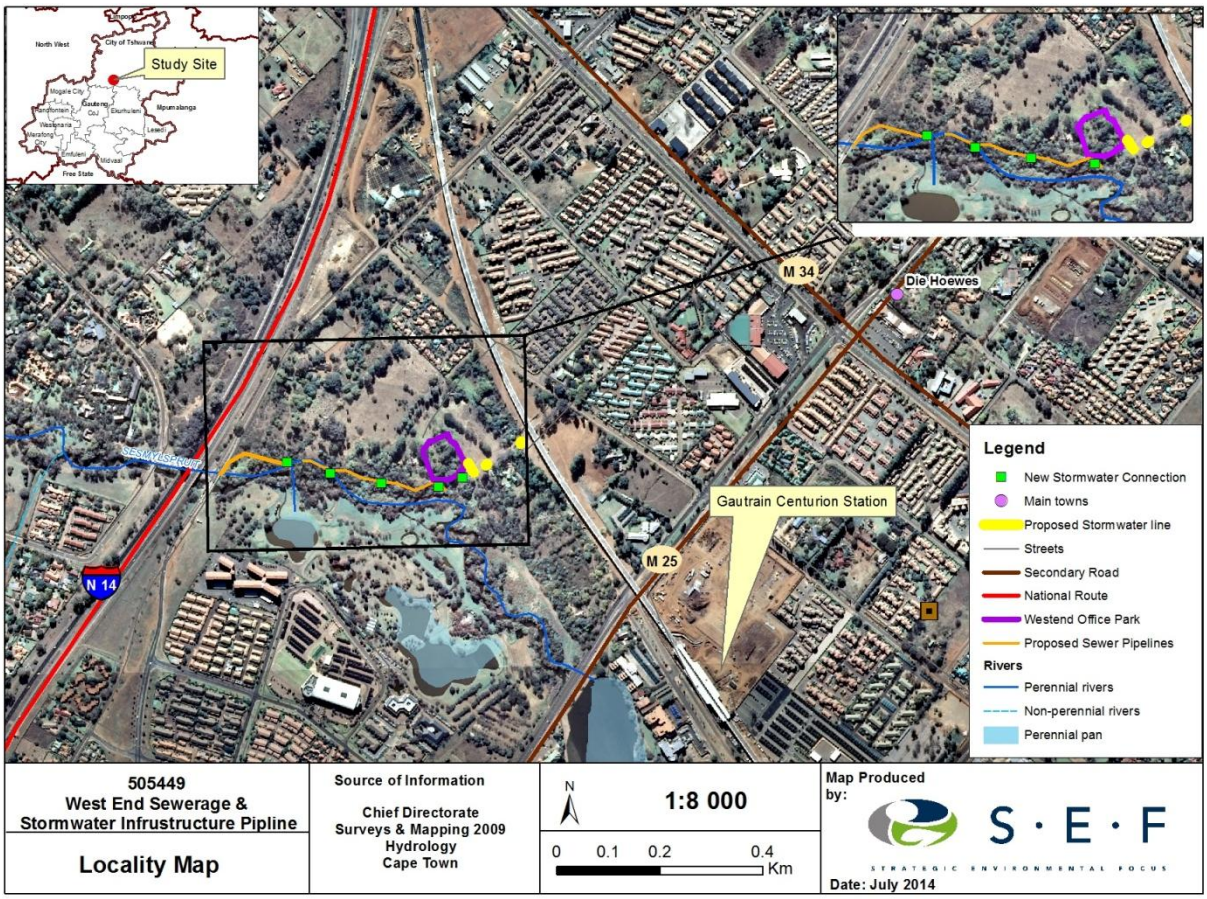

Figure 1: Locality Map

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.

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 SCOPE

The general principles contained within this document apply to all **PRE-CONSTRUCTION** and **CONSTRUCTION** activities associated with the proposed construction of the sewerage connection at the **West End Office Park** on the Remainder of Portion 259 and Portion 266 of Farm Zwartkop 356-JR; and Holdings 231 and 232, Lyttelton Agricultural Holdings, Extension 1 in Centurion, CoT, Gauteng Province.

1.3.1 Legal Requirement of the EMPr

The Bill of Rights – Chapter 2 of the Constitution Act No. 108 of 1996, includes an environmental right (Section 24) according to which, *"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 the sustainable use of natural resources while promoting justifiable economic and social development".*

In addition, Section 28 of the National Environmental Management Act No 107 of 1998 (NEMA), provides for a duty of care approach which requires, *"every person causing significant pollution or degradation of the environment, to take reasonable measures to prevent it from occurring, continuing or recurring"*. Therefore, in order to promote effective environmental management throughout the life-cycle of a project, it is important that management actions arising from Environmental Impact Assessments (EIAs) are clearly defined and translated into an Environmental Management Programme (EMPr) for the design, construction, operation and/or decommissioning phases of a project.

According to the national Department of Environmental Affairs, an Environmental Management Programme (EMPr) can be defined as, *"an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented; and that the positive benefits of the project are enhanced".*

1.3.2 Site specific information

1.3.2.1 Proposed activity and local context

The proposed activity of the project involves the construction of the sewerage pipeline to connect the West End Office Park and the connection point of the existing sewer line. The project also involves the installation of the stormwater pipeline and outlet structures which will be constructed perpendicular to the Hennops River The West End Office Park is situated on the Remainder of Portion 259 and Portion 266 of Farm Zwartkop 356-JR; and Holdings 231 and 232 Lyttelton Agricultural Holdings Extension 1 in Centurion, CoT, Gauteng Province

The proposed 280m long connection sewerage pipeline and stormwater infrastructure is aimed at servicing the West End Office Park, which is currently under construction. The West End Office Park is being established as part of the application for township establishment that was granted a positive Environmental Authorisation (in June 2007, Reference Gaut 002/521). The West End Office Park however requires sewage services, stormwater infrastructure and other basic services such as water and power supply as well as roads for its operation.

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
Soil Disturbance and Erosion	Site	To prevent the loss of topsoil To prevent gulley erosion or significant erosion.	• Soil erosion during construction and operational phases
Siltation of the Watercourse	Site	To prevent siltation of the watercourse located adjacent to the proposed sewerage pipeline	• Siltation of the watercourse which will result in the shallow stream; and • Reduced water quality of the watercourse.
Pollution of Watercourse by Sewerage	Site & Local Area	To prevent pollution of the watercourse by the sewerage	• Eutrophication of the watercourse; • Degraded water quality of the watercourse; • Destruction of the aquatic ecosystem.
Increase in ambient noise levels	Site & Local Area	To minimise the effect of noise on surrounding residents both during construction.	• Noise limits being exceeded.
Increased demand for municipal services	Local Area	To ensure that the demand for municipal sewerage services does not exceed the capacity of the municipal system.	• Increased pressure on the municipal sewerage system; • More sewerage pipelines blockage or bursting incidents
Socio-economic	Local Area	To assure that the development benefits the local people through employment, transfer of skills and training.	• Employment; and • Social upliftment.
Destabilisation of Structural Integrity of the Gautrain Viaduct	Regional	To prevent the percolation of surface water that would result in the dissolving of the dolomitic rock	• Formation of cavities and voids resulting in sinkholes and dolines. Sinkholes and dolines. • Damage to the Gautrain infrastructure and the surrounding structures

1.3.3 Interpretations

The implementation of the EMPr is not an additional or "add on" requirement. The EMPr is legally binding through NEMA. 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 10400, SANS 1200, SANS 2001, etc.), as applicable.

1.3.4 Project phase

This EMPr is specifically compiled for the period of time prior to commencement of, and activities associated with construction (pre-construction and construction phases) of the proposed sewerage connection and stormwater infrastructure for the West End Office Park on the Remainder of Portion

259 and Portion 266 of Farm Zwartkop 356-JR; and Holdings 231 and 232, Lyttelton Agricultural Holdings, Extension 1 in Centurion, CoT, Gauteng Province.

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 mind-set 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, Project Manager, 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 PM, EO and ECO on a regular basis in this regard.

1.5 PURPOSE OF THE EMPR

The purpose of this EMPr is to address and clearly outline control strategies which must be implemented during the pre-construction and construction phases of the **West End Office Park Sewerage Pipeline and Stormwater Infrastructure** project, in order to achieve the desired level of performance in terms of potential environmental impacts identified.

The EMPr is meant to ensure that the following is undertaken:

- Management and control of potential impacts;
- Comprehensive monitoring; and
- The main obligations of key role players are reflected.

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:

- Receipt of an Environmental Authorisation;
- 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, amongst others, the Lead Authority (A), Other Authorities (OA), Developer/Proponent (D), Project Manager (PM), Environmental Site Officer (ESO), Environmental Control Officer (ECO), Contractors (C) and 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. In this case the Gauteng Department of Agriculture and Rural Development (GDARD).	The authorities are responsible for overall environmental management within the province and ensuring that the monitoring of the EMPr and other authorisation documentation is carried out, transgressions with the EMPr or environmental legislation.
Other Authority (OA)	Includes organisations and bodies like Municipalities (District & Local 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 may need to review and comment on the content of the particular EMPr).

FUNCTION	ROLE	RESPONSIBILITIES
Developer/ Proponent (D/P)	Proponent (Abland) is the entity who wishes to undertake the project and who is ultimately accountable for ensuring compliance to the EMPr and EA, as well as 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. • Approving the issuance of fines, penalties or suspending work for contravention of the EMPr. • Giving instructions regarding corrective action to the Project Team.

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 D/P 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 informs 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.

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.	• 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 on-going 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.	• All responsibilities as stated for the CE applies. • 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 in accordance with the requirements of the Developer/Proponent and the Environmental Authorisation. • 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. • Being responsible for the employees of all Sub-contractors and ensure that all of its sub-contractors, employees, suppliers or agents etc. are fully aware of the environmental requirements detailed in the Environmental Specifications of the EMPr and EA. • 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, EA and approved Method Statements and seek advice for required corrective actions and/or site remediation. • Recording and reporting all incidents and complaints received to the D/P, PM and ECO. • 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 based on site in order 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. • 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 and C for signing off. • Recording and reporting all complaints received to the Developer/ECO and C. • Responsible for the day-to-day environmental management on site.

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 and/or Project Manager. 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 D/P 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. • Performing Environmental Induction on the contents of this EMPr to the site team (PM, CE/ER, CR, ESO and Contractor) and discuss the contents in detail prior to them starting any work on site (once-off). • Keeping record of everyone who attended the EMPr introduction training course. • Reviewing and approving construction method statements with input from the ESO and Engineer, where necessary, in order to ensure that the environmental specifications contained within this EMPr and Environmental Authorisation are adhered to. • 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. • Validating Environmental Site Documentation and Records (Toolbox talks, service receipts, complaints, incidents, monitoring, etc.). • Monitoring that environmental impacts are kept to a minimum. • Immediately reporting any serious environmental incidents or impacts to the D/P, 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 (when requested). • 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.

FUNCTION	ROLE	RESPONSIBILITIES
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".*

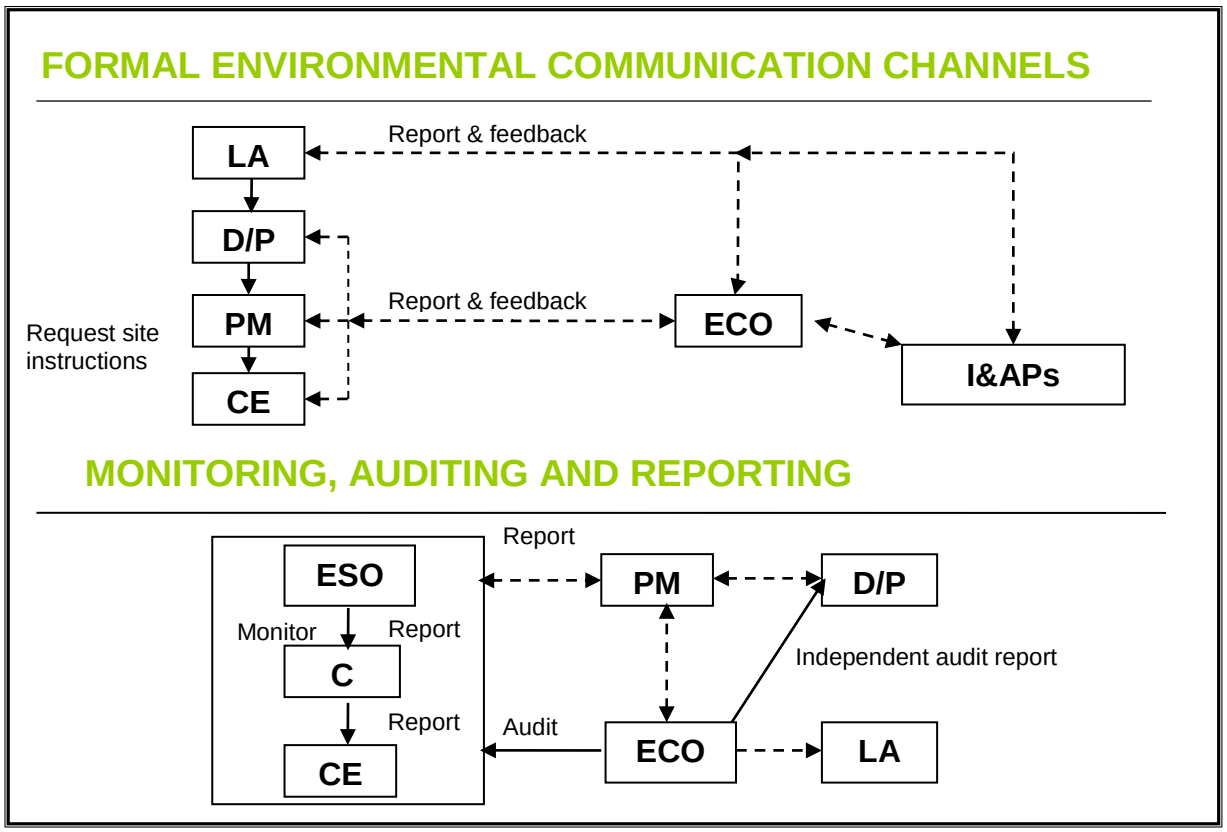

Figure 2 Recommended lines of communication, reporting and monitoring

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 indicate 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 (where issued). The ESO is 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. The Environmental Awareness training should include the following as a minimum:

- The importance of conformance with all environmental policies.
- The significant environmental impacts, actual or potential, as a result of their work activities.
- The environmental benefits of improved personal performance.
- Their roles and responsibilities in achieving conformance with the environmental policy and procedures, including emergency preparedness and response requirements.
- The potential consequences of variation from specified operating procedures.
- The mitigation measures required to be implemented when carrying out their work activities.
- The importance of not littering.
- The need to use water sparingly.
- Details of, and encouragement to, minimise the production of waste and re-use, recover and recycle waste where possible.
- Details regarding archaeological and/or historical objects which may be unearthed during construction and the procedures to be followed should these be encountered.
- The procedures which should be followed should a grave be encountered, or unearthed during the construction phase.
- Details regarding fauna and flora, including protected/endangered plant and animal species, and the procedures to be followed should these be encountered during the construction phase.

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 and or Engineer/PM. The Method Statements set out the plant, materials, labour and method that the contractor proposes using to carry out an activity, identified by the PM/ECO and/or Engineer. The Method Statements contain the appropriate detail such that the PM/ECO 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 PM/ECO and Engineer to formalise the 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 PM/ECO and 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 PM/Engineer and ECO for approval before construction commences (Refer to Annexure 5A and 5B for templates which may be used). These include *inter alia*:

- Solid waste management;
- Hazardous waste management;
- 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; 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 6 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 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 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 7 for a sample). The lodged complaint must be brought to the attention of the PM who 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 by the ECO to the complainant must be provided within **seven working days**.

2.5 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.

- A copy of all Environmental Authorisations applicable to the development (includes Environmental Authorisation, Water Use License, etc.);
- A copy of Environmental Management Programme (EMPr);
- Way leaves, letters of agreements, etc.;
- Environmental Method statements;
- Incident reports and Incident registers;
- Complaints register;
- Physical access plan;
- Copies of ECO reports (external management and monitoring);
- Copies of EO reports (internal management and monitoring – daily/weekly checklists);
- Awareness training material (toolbox talks, inductions, etc.);
- A register of all MSDS's for hazardous substances on site;
- Service receipts and/or a Waste manifest; and
- Records of all remediation / rehabilitation activities.

2.6 PRO FORMA DOCUMENTATION

2.6.1 Prior to the commencement of construction activities

The following attached (Refer to Annexure 1 – 5) *pro forma* documentation 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 Project Manager/Engineer;
- Declaration of understanding by the Contractor;
- Declaration of understanding by the Environmental Site Officer;
- Environmental Method statements; and
- ECO / Engineer approval for method statements.

2.6.2 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/Proponents, Project Managers, 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 21-49) form the core mitigation measures appropriate to the **pre-construction** and **construction phase**. 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. 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. This "construction" section is divided into three functional areas, namely "materials"; "plant"; and "construction". 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.

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.

"Section" – This cell will identify different aspects of the project, i.e. General Planning, Materials, Plant and Construction

"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.

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

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
A1 PROJECT CONTRACT AND PROGRAMME			
i. 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. ii. 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. iii. The "declarations of understanding" on the EMPr (Annexure 1 - 4) must be signed prior to the commencement of construction. Signed declarations of understanding must form part of site documentation. iv. The contractor must commit into using SABS approved materials for the sewerage pipeline and the stormwater outlets v. The approved Water Management Plan must be included as part of the tender documentation. vi. It must be set clear that the Water Management Plan will be implemented throughout the life of the project.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase • Ensure environmental awareness and formalise environmental responsibilities and implementation • To minimise chances of impacting on the dolomite. • Prevent the formation of sinkholes and associated risks.	• Contract records • Signed declaration pro formas	• Prior to construction during planning
A2 APPOINTMENTS AND DUTIES OF PROJECT TEAM			
i. 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. ii. 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 2. iii. 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. iv. The project proponent must appoint a person responsible for the implantation of	• Contingencies for minimising negative impacts anticipated to occur during the construction phase	• Contract records • Signed declaration pro formas	• Prior to construction during planning

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
the document.			
A3 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 PM/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. iii. Method statements to be produced must be in line with the EMPr, the Stormwater Management Plan and the Water Management Plan.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase	• Approved method statements and relevant pro forma documents • Training records	• As and when required
A4 SITE DEMARCATION AND DEVELOPMENT			
i. The surveys for the overall project area and construction footprint must be complete and clearly demarcated before the contractors begin construction. ii. "No-go" areas such as permanent wet areas, 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. Construction camps, offices, workshops, staff accommodation, etc. should be established on the site in a manner that does not adversely affect the environment, especially the Hennops River (the adjacent watercourse). The construction laydown areas must be within the footprint of the West End Office Park construction site. Before construction can begin, a site layout plan should be submitted to the PM/Engineer for approval. The site layout plan should detail the exact location, extent and construction details of these facilities and the impact mitigation measures the contractor proposes to put in place. In particular, this plan must include:- • Site access. • Access points • All material and equipment storage areas (including storage areas for hazardous substance such as fuel and chemicals) and laydown areas - Only designated areas may be used for the storage of materials, machinery, equipment, site offices and accommodation facilities.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase • To prevent possible impacts on the existing infrastructure. • To ensure proper functioning of the infrastructure that is to be connected.	• Demarcated area's • Filled in section of this document • Site inspection report from the ECO	• As and when required

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
• Areas where construction vehicles will be serviced and washed. • Security requirements (including temporary and permanent fencing, and lighting) and accommodation areas for security staff. • Areas where vegetation will be cleared. • The locality as well as the layout of the temporary waste storage facilities for litter, kitchen refuse, sewage and workshop-derived effluents. Waste storage facilities for sewage, grey water and workshop-derived effluents, where no formal facilities exist. • Provision of potable water and temporary ablution facilities. • Potential pollution hazards. iv. The Contractor shall restrict all activities to the designated areas on the approved construction layout plan. Any relaxation or modification of the construction layout plan is to be approved by the ECO. v. Municipal specifications must be adhered to at all times.			
A5 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. The contractor understands that failure to adhere to the requirements of the EMPr will result in fines as stipulated in Section 4.1.2 'Fines and Penalties, over and above the costs incurred for any remediation required as result of the specific non-compliance. iv. Should the project proponent intend to change the capacity or size of the proposed infrastructure, an approval must be obtained from the relevant authorities.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase	• Method statements	• As and when required

PHASE OF DEVELOPMENT	CONSTRUCTION
IMPACT / ISSUE	MATERIALS
SECTION	B

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
B1 STOCKPILES			
i. The contractor must provide **method statements** for the "stockpiling" prior to construction taking place. ii. The stockpiles may only be placed within the demarcated areas the location of which must be approved by the CE/ER or ECO. iii. All material and soil stockpiles must be properly and clearly labelled. iv. All stockpiled material must be easily accessible without any environmental damage. Construction activities will be planned in such that materials excavated from cuttings, in so far as possible, can be transported direct to and placed at the point where it is to be used. v. Stockpiles are to be stabilised if signs of erosion are visible. Temporarily stockpiled material must be stockpiled so that the spread of materials are minimised. vi. The contractor must avoid vegetated areas that will not be cleared. vii. During the life of the stockpiles, the contractor shall that stockpiles are: • Positioned and sloped to create the least visual impact; • Constructed and maintained so as to avoid erosion and contamination of surrounding environment and the watercourse; and • Kept free from all alien/undesirable vegetation. viii. Storm water run-off from the stockpile sites and other related areas must be fitted with the necessary pollution prevention measures such as silt traps and may not run freely into the immediate and surrounding environments. ix. Soils from different horizons must be stock piled such that topsoil stockpiles do not get contaminated by sub-soil material. x. Topsoil stockpiles must not be higher than 2 meters to avoid compaction thereby maintaining the soil integrity and chemical composition. xi. Topsoil stockpiles must be monitored for invasive exotic vegetation growth. Contractors must remediate as and when required in consultation with the ECO. xii. Topsoil stockpiles must be clearly demarcated as no-go areas and no plant, workforce or any construction activities may be allowed onto the topsoil stockpiles.	• 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

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
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, adjacent watercourse and vegetation must be avoided at all times. The mixing of concrete must be done at specifically selected and designated sites on mortar boards or concrete aprons (or similar structures) where applicable. iii. Proper cleaning trays must be made available and utilised on site for the cleaning of cement mixing and handling equipment. iv. 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. v. Any spillage that may occur must be investigated and immediate remedial action must be taken. vi. 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. All excess aggregate shall also be removed. vii. Centralised cement batching areas must be located in consultation with the CE/ER, PM 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, which may result in the contamination of the adjacent watercourse. viii. All wastewater and runoff from batching areas shall be strictly controlled, and cement contaminated water shall be collected, stored and disposed of at a site approved by the ECO. ix. Batching areas should be equipped with bund walls in order to ensure that waste water and cement containing effluent is contained.	• 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
B3 HANDLING AND STORAGE OF DANGEROUS AND TOXIC MATERIALS AND CHEMICALS			

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
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. Materials such as fuel and oilmust be sealed and stored in bermed areas, on impermeable surfaces, under lock and key, in well-ventilated areas. iv. Storage areas must display the required safety signs depicting "No Smoking", "No Naked lights" and "Danger" (as relevant). Containers must be clearly marked to indicate contents as well as safety requirements. v. 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. 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 and Sanitation (DWS) is notified accordingly. viii. All spilled material must be recorded in a spills register/incident register along with the date of occurrence and corrective action taken. ix. 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). x. All spilled hazardous substances must be contained in impermeable containers for removal to a licensed hazardous waste site, (this includes contaminated soils, oily rags, used funnels and drenched spill kit material).	• 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
B4 USE OF OILS AND CHEMICALS & DANGEROUS AND TOXIC MATERIALS			

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
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 PM/CE or ECO. iv. 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 pollution of the environment • No litigation due to transgression of pollution control acts	• As required

PHASE OF DEVELOPMENT	CONSTRUCTION
IMPACT / ISSUE	PLANT
SECTION	C

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
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 PM/ER 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. Water for human consumption should be available at the site offices and at other convenient locations on site (The use of raw water from the adjacent watercourse is strictly prohibited). iv. Adequate closed refuse bins must be provided and cleaned on a daily basis. v. The feeding, or leaving of food, for stray or other animals in the area is strictly prohibited. vi. 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.). vii. 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. viii. Only security personnel will be allowed to sleep over on site. ix. Litter (even if originating outside the camp) and empty concrete bags, etc. must be picked up daily and put into suitably closed bins. x. 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 PM/ER 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

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
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. The contractor must ensure that the staff is sensitised to the fact that they must use these toilets at all times. iii. 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. iv. 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, PM or ECO. v. Toilets must not be located close to the adjacent watercourse, but in the existing footprint of West End Office Park, and such toilets must be easily accessible. Should toilets be needed elsewhere, their location must first be approved by the ER, PM 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 must be secured to the ground and have a sufficient locking mechanism operational at all times.	• 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

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
C3 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. 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. iii. The construction camp must be watered during dry and windy conditions to control dust fallout. iv. Dust production must be controlled by regular watering of 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). v. 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. vi. Excessive dust conditions must be reported to the ECO. vii. Should excessive dust fallout be noted on site, regular monitoring of dust fallout must then be carried out and the records kept on site. viii. 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

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
C4 NOISE			
i. In terms of noise impact for various increases over the ambient, the National Noise Regulations define an increase of 7dB as "disturbing". Noise levels during construction must therefore be kept within 7dB of the baseline data. ii. Should complaints be received, monitoring of noise levels must be conducted regularly during construction and the records kept on site. iii. Work hours during (07:00 – 17:00 during weekdays; 08:00 – 15:00 on Saturdays; and 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 with the local residents and businesses by the PM or Proponent. iv. All construction vehicles must be in a good working order to reduce possible noise pollution. 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.	• 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

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
C5 WORKSHOP EQUIPMENT, MAINTENANCE AND STORAGE			
Refer to Section B3 – B4 for all management measures related to storage, handling and use of dangerous or toxic materials as well as oils and petrochemicals. 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 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. The workshop area must be located within the footprint of the West End Office Park, far from the Hennops River. iv. 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. v. Workshop areas must be monitored for oil and fuel spills and such spills must be cleaned and remediated to the satisfaction of the PM, ER or ECO. Cleaning and remediation must be done with products that are in line with best environmental practice i.e. SUNSORB, Drizit, etc. vi. 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. vii. The following must be applied: • All contaminated soil / yard stone shall be removed and disposed of as hazardous waste at a registered facility. • Used oil, lubricants and cleaning materials from the maintenance of vehicles and machinery shall be collected in a holding bin and sent back to the supplier, a recycling centre or to a registered hazardous waste facility. • All used filter materials shall be stored in a secure bin for disposal off site. • All spills of hazardous substances must be reported 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

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
C6 WASTE MANAGEMENT			
For the purposes of these Environmental Specifications, solid waste includes all debris and waste (e.g. litter, domestic waste and food remains, wire and cable pieces, vegetation and tree stumps, building rubble, etc), including hazardous waste. 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. All personnel shall be instructed to dispose of all waste in the proper manner (point ii and iii above). This should be conveyed through toolbox talks. v. 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. vi. Solid waste shall be stored in a designated area within the site area in covered, tip proof metal drums for collection and disposal (a waste skip with a tarpaulin covered may also be used). As far as possible, general waste (including paper, glass, plastics, aluminium, etc.) shall be sorted for recycling. vii. Bins must be clearly marked for ease of management. viii. Refuse bins must be strategically located around the construction site to handle the amount of litter, debris, and builder's wastes generated. 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.	• 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

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
C6 WASTE MANAGEMENT (CONTINUED…)			
x. 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. xi. Subcontractors must be bound to all management activities of this EMPr. xii. 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. xiii. A skip, with a cover, must be used to contain refuse from campsite bins, rubble and other construction material. xiv. Material contaminated of hazardous and non-hazardous substances or waste must be bagged and stored at the designated area for disposal at the licences landfill site.	• 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

PHASE OF DEVELOPMENT	CONSTRUCTION
IMPACT / ISSUE	CONSTRUCTION
SECTION	D

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE	FREQUENCY
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. 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. iii. Only security personnel will be allowed to sleep over on site. 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. Dedicated wash areas must be situated away from watercourses and areas of shallow groundwater. v. 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. vi. 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. vii. 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. viii. 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
D2 FIRES			

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
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. A firebreak shall be cleared and maintained around the perimeter of the camp and office area at all times. iv. There should be basic fire fighting equipment available on site at all times. This shall include at least rubber beaters and one fire extinguisher. v. Fires will only be allowed in facilities especially constructed for this purpose within fenced Contractor's camps. vi. Fires within the designated areas must be small in scale so as to prevent excessive smoke being released into the air. 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 or any surrounding natural vegetation. vii. Wood, charcoal or anthracite are the only fuels permitted to be used for fires. The contractor must provide sufficient wood (fuel) for this purpose.	• 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
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. Necessary mitigation measures such as sand bags, earth berms, soil saver blankets and temporary vegetation should be initiated on site if necessary. ii. There should be no prolonged storage or stockpiling of any soil or construction debris that could wash into the adjacent watercourse.Where re-vegetation of slopes is undertaken, this must be done in accordance with the landscape architect (or appointed landscaper). iii. 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. iv. Vegetation should only be cleared in areas necessary for the implementation of the proposed project i.e. the pipeline corridor; and the area should be re-vegetated post construction (as per the Rehabilitation Plan); v. Construction of the proposed pipeline and the stormwater outlets should preferably be undertaken during the drier winter months of the year.	• 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 • To prevent sedimentation and siltation on the adjacent watercourse	• 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

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
vi. These areas must be cordoned off so that vehicles or construction personnel cannot gain access to these areas. vii. Where erosion and/or sedimentation occurs on or off the site (despite the Contractor complying with the foregoing), rectification shall be carried out in accordance with details specified by the Engineer. viii. A Rehabilitation Plan must be implemented accordingly to minimise/prevent the possible erosion impacs.			
D4 HERITAGE			
i. In terms of the National Heritage Act, 1999 (Act No. 25 of 1999), 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 ASAP. The local heritage agency should then be notified within 24 hours. Work may then only resume once clearance is given in writing by the archaeologist who undertakes the investigation. ii. Upon receipt of such notification, the ECO will arrange for the excavation to be examined by an Archaeologist. iii. Under no circumstances must archaeological artefacts be removed, destroyed or interfered. iv. 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
D5 FAUNA			

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
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 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. The use of herbicides and pesticides must be avoided wherever possible. viii. Construction activities must commence during the winter months to minimise interference	• 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
D6 FLORA			

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
i. Clearing of vegetation on site must be undertaken with an ECO present on site. ii. 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. iii. Vegetation should only be cleared in areas necessary for the progression of the project. Open spaces should be re-vegetated subsequent to construction. iv. Vegetation to be used during landscaping and rehabilitation of the site must be as per the Rehabilitation Plan. It should preferably be indigenous plant. Active re-vegetation must take place under the supervision of the ECO. v. 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. vi. No open fires shall be allowed on site under any circumstances except in adequate facilities within the crew camp, Forest Act, 1984 (Act No. 122 of 1984). vii. In accordance with the Rehabilitation Plan, 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
D7 NO-GO / SENSITIVE AREAS			
i. The construction footprint must be kept to a minimum must be clearly demarcated (e.g. warning tape) prior to the commencement of construction activities. This will assist to prevent or reduce the infringement of the development on surrounding habitats, especially the adjacent watercourse. ii. The immediate river banks must be treated as no-go areas for the construction activities to prevent destabilisation of the river banks. iii. All construction activities must remain within the boundaries of the development area, as demarcated at the start of construction. iv. No-go areas must be demarcated with fencing/warning tape and these areas and the type of fencing/demarcation must be approved by the ECO. v. No construction or any related activities may take place in No-go areas.	• 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

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
D8 VISUAL IMPACT			
i. The Contractor shall ensure that construction activities do not have unreasonable impact on the aesthetics of the area ii. Shade cloth must be utilised to conceal and minimise the visual impact of contractor camps, lay down and storage areas. iii. Landscaping must enhance the aesthetic appeal of the development. iv. 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. v. Rubble and litter must be removed every two weeks or more often as the need arises and be disposed of at a registered landfill. vi. Lighting at the construction camp should be kept to a minimum, to minimise light pollution and intrusion especially into adjacent properties. Security lights should be directed to face downwards in order to reduce light pollution. vii. 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 or any other external parties.	• Monitor daily
D9 ACCESS ROUTE			
i. No unauthorised access is permitted to the construction area. Only the identified existing access point must be used (Hall Street). ii. Any damage or degradation will be investigated and fines issued, the affected areas must be immediately rehabilitated. iii. No driving off from the marked roads is permitted. iv. No driving must be allowed in close proximity to the adjacent watercourse. 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

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
D10 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. ii. Access to the site must be controlled so as to restrict unauthorised persons from entering the site. iii. Steep slopes and trenches must be barricaded with a danger tape to alert the site personnel. iv. Toolbox talks must be conducted every morning and prior commencement on any new activity. v. 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. vi. 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. vii. 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. viii. 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. ix. 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
D11 GEOTECHNICAL			
i. An approved Dolomite Risk Management Plan must be in place prior to commencement of the activities on site. ii. An approved Water Management Plan must be in place prior to commencement of activities.	• Minimise potential structural faults • Minimise trench collapse • To prevent formation of sinkholes	• No visible signs of backfill deterioration or trench collapse	• As and when required

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
iii. Founding conditions for individual structures must be confirmed by a qualified Geotechnical Engineer / Structural Engineer / Geologist. iv. All trenches and excavation works must be properly backfilled and compacted according to specifications given in sub-clause 5.2.4. Of SANS 1200DA. v. Mechanical methods of rock breaking will have noise and dust impacts that must be managed. vi. **Method Statements** for chemical breaking must be provided by the CE/ER.			
D12 GROUNDWATER AND DOLOMITE			
i. Remaining sewer from each section of the sewerage pipeline (where the connection will be made) must be pumped out before dismantling. ii. Should sewerage spills occur during connection of the sewer pipeline, all contaminated soils either be treated in situ, or removed to a licensed hazardous waste disposal facility. Soil and ground water at the site of the spill should be tested for the presence of organic contaminants originating from the spill through the installation of an appropriate borehole. iii. The contractor must ensure that there is proper backfilling and compaction of trenches after installation of pipeline. iv. It must be ensured that surface/storm water is diverted away from excavation trenches. v. Backfilling of trench must be shaped in such a way that water ponding and erosion of backfilled trench are avoided. vi. Pressure tests must be performed with good quality water subsequent to the installation of the sewerage pipeline.	• To prevent water ponding. • To prevent soil erosion. • To minimise chances of surface water percolation. • To prevent dissolution of the dolomite. • To prevent groundwater contamination by the organic material.	• No signs of sinkholes. • No signs of erosion and backfill deterioration or trench collapse • No signs of groundwater contamination	• As and when required
D13 HYDROLOGY			
i. The quality and flow direction of the adjacent watercourse shall be established prior to disturbing any area for construction purposes. Cognisance shall be taken of these aspects and incorporated into the planning of all construction activities. ii. The contractor must ensure that excessive quantities of sand, silt and silt-laden water do not enter the adjacent watercourse. The Contractor's responsibility shall extend to the clearing of the watercourse that have been affected by such negligence within and beyond the boundaries of the site. iii. Storage containers must be regularly inspected so as to prevent leaks that may result to	• 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 visible erosion scaring once construction is completed	• As and when required, monitor daily

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
the contamination of the watercourse. iv. Design of the storm water drainage system must ensure that the adjacent watercourse is not negatively impacted. Appropriate measures, e.g. erection of silt traps, or drainage retention areas to prevent silt and sand entering the adjacent watercourse must be taken. v. No wastewater may run freely into any of the environment and/or the watercourse. vi. Approval must be obtained from DWS for any activities that require authorisation in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998). vii. Emergency plans must be in place in case of spillages into the watercourse during the construction phase. viii. 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. ix. No vehicular access is allowed in permanently wet areas and in close proximity to the watercourse	• Minimise scarring of the soil surface and 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	• 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	
D14 AQUATIC ECOSYSTEM			
i. Erect silt curtains on the downslope sides of all construction areas in close proximity to water resources. ii. The temporary storage of topsoil, inert spoil, fill, etc. should be above the 20 year floodline or at least 20m from the top of the bank of adjacent watercourse, whichever is the maximum or as agreed with the ECO. iii. To prevent erosion of material that is stockpiled for long periods, the material must be retained in a bermed area. iv. Mulch, roughen or sterile grass seeding can be used on any batter or topsoil stockpile that is to be maintained for longer than 28 days. v. Construct an earth bank around the upslope portion of any stockpiles in order to redirect runoff and prevent scouring of stockpiles. vi. Erect a silt fence around any stockpiles in order to trap sediment and prevent stockpile sediment loss. vii. Stockpiles should not be higher than 2m to avoid compaction, and single handling is recommended. viii. Dust suppression is necessary for stockpiles older than a month – with either water or a	• Minimise the negative impacts on the aquatic ecosystem • Prevent siltation of the watercourse	• Minimal negative impact of the proposed activity on the natural environment. • No siltation of the watercourse	• As and when required

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
biodegradable chemical binding agent. ix. Construction vehicles are to be maintained in good working order, to reduce the probability of leakage of fuels and lubricants. x. A walled concrete platform, dedicated store with adequate flooring or bermed area should be used to accommodate chemicals such as fuel, oil, paint, herbicide and insecticides, as appropriate, in well-ventilated areas. xi. Storage of potentially hazardous materials should be above any 100-year flood line, or as agreed with the ECO. These materials include fuel, oil, cement, bitumen etc. xii. Sufficient care must be taken when handling these materials to prevent pollution. xiii. Surface water draining off contaminated areas containing oil and petrol would need to be channelled towards a sump which will separate these chemicals and oils. xiv. Oil residue shall be treated with oil absorbent such as Drizit or similar and this material removed to an approved waste site. xv. Concrete, if used, is to be mixed on mixing trays only, not on exposed soil; xvi. Concrete shall be mixed only in areas which have been specially demarcated for this purpose. xvii. All concrete that is spilled outside these areas shall be promptly removed by the Contractor and taken to an approved dumpsite. xviii. After all the concrete mixing is complete all waste concrete shall be removed from the batching area and disposed of at an approved dumpsite. xix. Storm water shall not be allowed to flow through the batching area. Cement sediment shall be removed from time to time and disposed of in a manner as instructed by the Consulting Engineer. xx. All construction materials liable to spillage are to be stored in appropriate structures with impermeable flooring. xxi. Portable septic toilets are to be located outside of the 1-100year floodline. xxii. Under no circumstances may ablutions occur outside of the provided facilities. xxiii. At all times care should be taken not to contaminate the adjacent watercourse. xxiv. No uncontrolled discharges from the construction crew camps to the adjacent watercourse shall be permitted. Any discharge points need to be approved by the relevant authority. xxv. In the case of pollution of any surface or groundwater, the Regional Representative of the DWS must be informed immediately.			

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
xxvi. Where construction is in close proximity to the existing sewer line, excavations must be done by hand while at all times ensuring that the soil beneath the sewer lines is not destabilised. xxvii. Store all litter carefully so it cannot be washed or blown into any of the adjacent watercourse. xxviii. Provide bins for construction workers and staff at appropriate locations, particularly where food is consumed. xxix. The construction site should be cleaned daily and litter removed. xxx. Conduct on-going staff awareness programs so as to reinforce the need to avoid littering. xxxi. Backfill must be compacted to form a stabilised and durable blanket; and the load above the sewer line must at no time be exceeded.			
D15 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 on the site. These areas are to be marked as "no-go" areas. vi. 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.	• Minimise scarring 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	• 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	• Daily

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
vii. Single handling is recommended. Stock piles must not be higher than 2m to avoid compaction. viii. Subsoil shall be stored separately from the topsoil if not used for construction purposes. ix. A silt fence must be erected around the all the soil stockpiles in order to trap sediment and prevent the loss of soil and it washing into the adjacent river. x. 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. xi. There should be no prolonged storage or stockpiling of any soil or construction debris that could wash into the adjacent watercourse. xii. Dust suppression is necessary for stockpiles older than a month if deemed necessary by the RE, ECO, or PM – with either water or a biodegradable chemical binding agent. xiii. Backfilling must be undertaken in such a way that the final contours blend with the surrounding environment. xiv. Remediated slopes must preferably be graded to slopes between 1:2 and 1:3. xv. Remediated slopes can then be capped with topsoil. This requires a minimum layer of 100 mm in most areas. xvi. Disturbed surfaces to be rehabilitated must be ripped and the area must be covered with a layer of topsoil material excavated from the site. The rehabilitation must be undertaken in accordance with the Rehabilitation Plan. xvii. 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. xviii. Soils contaminated by hazardous substances shall be disposed of at an approved hazardous waste disposal site.			
D16 REHABILITATION			
i. Rehabilitation must commence subsequent to the implementation of the Stormwater Management Plan. ii. Rehabilitation shall ensure that all areas disturbed by the construction activity is returned to a near as possible natural state (similar or better state than before). Recommendations on the Rehabilitation plan must be implemented to ensure that the desired state of the environment and the Hennops River banks is achieved. iii. Rehabilitation includes, but is not limited to, the following activities: • Collection and legal disposal of all contaminated soil by hydrocarbons (regarded as	• 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	• Daily once rehabilitation is initiated.

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
hazardous waste), by excavating to the depth of contaminant penetration and removal to a facility registered for the disposal of hazardous materials. • Collection and legal disposal of all rubble and construction waste associated with the development (unused materials including spoils, waste concrete and cement, waste water washings, 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. iv. All damaged / dead vegetation should be cleared from site and Deleterious material such as plastic, metal and lumps of concrete should be removed by hand. v. The stones and boulders occurring on site must be utilised for rehabilitation and stabilisation of the embankment. vi. Rehabilitation must be undertaken at all areas associated with construction as specified by the PM and/or ECO. vii. Rehabilitation of all disturbed areas shall be conducted to the satisfaction of the PM and/or the ECO. viii. No heavy construction vehicles are to traverse the newly placed topsoil, only light construction vehicles such as a bobcat loader / grader can be used to shape the topsoil layer. ix. Rehabilitation, landscaping and/or re-vegetation must commence once works are complete in a particular area x. It is recommended that the area be seeded either by hand or by hydro-seeding. xi. Trees and shrubs that were cleared during the fencing works should be replaced xii. Irrigation may be required to encourage early germination of grass seeds if the rehabilitation is completed during the dry winter months and where the rainy season is a few months away. Young trees / shrubs must also be irrigated until they reach semi-mature stage. xiii. Water may not be extracted from the adjacent watercourse, but should be provided by the contractor. xiv. Soils or areas contaminated with hydrocarbons or any hazardous substance must be rehabilitated as per the Rehabilitation Plan or recommendations of the ECO. xv. Access points and other areas compacted by vehicles during construction must be		and erosion • Method statement	

CONTROL OR MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY
scarified in order for plant roots to penetrate the soil and in effect promoting the restoration of natural vegetation. xvi. 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. xvii. The ECO or ecologist must sign off areas where vegetation cover has achieved 75% using nearby undisturbed areas of vegetation as a benchmark. xviii. Monitoring of the rehabilitation as well as the monitoring and eradication of the invasive species must be done in accordance with the Rehabilitation Plan.Corrective action and subsequent rehabilitation must be undertaken on areas that have been contaminated by the sewerage spill, oil or fuels. The corrective action and rehabilitation must be according rehabilitation plan and instructions by the ECO.			

SECTION 4: ENFORCEMENT, AUDITING & MONITORING

4.1 AUDITING AND MONITORING

The ECO must conduct, at a frequency as determined by the Department and stipulated in the relevant Environmental Authorisation (EA) for the project, independent environmental audits on the conditions of the EA and the requirements of the EMPr (where no frequency is stipulated by the Lead Authority, a minimum of monthly independent environmental audits should be undertaken). Before any construction activities commence, the ECO must compile an audit checklist based on the contents of this EMPr and conditions of the Environmental Authorisation (EA). The ECO must forward all audit reports to the Project Technical Team.

Evidence of the following as **key performance indicators (KPI's)** 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. Non-compliances with the Environmental Specification.
4. Incidents leading to litigation and legal contraventions.
5. Environmental damage that needs rehabilitation measures to be taken.

Site documentation including a copy of all monitoring reports, contractor environmental method statements and *pro forma* documentation (see Section 2.5 & Section 2.6) must be held by the Contractor/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 fails to comply with corrective or other instructions issued by the Engineer within a specific time, and
d. the Contractor fails to respond adequately to complaints from the public in line with requirements of this EMPr.

4.1.2 Fines and Penalties

Each non-conformance (in terms of this EMPr) not addressed within 4 weeks of being reported in ECO audit reports, will constitute a fine.

Fines

Fines will be issued for the transgressions listed below. Fines may be issued per incident at the

discretion of the Engineer/Project Manager. Such fines will be issued in addition to any remedial costs incurred as a result of non-compliance with the Environmental Specifications. The Engineer/Project Manager will inform the Contractor of the contravention and the amount of the fine, and will certify the amount as a deduction from monies due under the Contract.

Fines for the activities detailed below, will be imposed by the Engineer/Project Manager on the Contractor.

Table 7: Prescribed Penalties and Fines

	OFFENCE/TRANSGRESSION	FINE
A	Any persons, vehicles, plant, or thing related to the Contractor's operations within the designated boundaries of a "no-go" area.	**5,000**
B	Any vehicle driving in excess of designated speed limits.	**1,000**
C	Any vehicle being driven or parked, plant or materials being placed or stored outside the boundaries of the site without permission or due cause.	**2,000**
D	Persons walking/operating outside the boundaries of the site	**1,000**
E	Persistent and un-repaired oil leaks from machinery. The use of incorrect methods of decanting dangerous and toxic substances (such as not using of a proper funnel or a pump)	**2,500**
F	Excessive litter on or uncontained waste site	**500**
G	Lighting of illegal fires on site or burning of waste	**2,500**
H	The eating of meals on site outside the defined eating area or individual not making use of the site ablution facilities	**1,000**
I	Dust or excess noise on or emanating from site	**1,000**
J	Any person, vehicle, item of plant, or anything related to the Contractor's operations causing a public nuisance (Valid complaint received)	**2,000**
K	Any theft from adjacent landowners	**5,000**
L	Any pollution of drainage systems or water resources	**2,500**
M	Incorrect handling and stockpiling of topsoil material	**1,000**
N	Any persons, vehicles, plant or thing related to the Contractor's operations within the designated boundaries of a Restricted Area without approval in a Method Statement or written permission received from the Engineer/Project Manager.	**1,000**
O	Any other contravention of the Environmental Specification or any degradation to the environmental as identified by the ECO/PM/Engineer.	**Variable**

For each subsequent similar offence, the fine may (at the discretion of the Engineer/Project Manager) be doubled in value to a maximum value of R 10,000-00. The Engineer/Project Manager shall be the judge as to what constitutes a transgression in terms of this clause.

All fines (monies not paid out under the Contract) must be paid into a fund to be administered by the Engineer/Project Manager, to be used specifically for the rehabilitation or addressing of environmental aspects on site.

4.1.3 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. Copy of the Environmental Management Programme (EMPr) and subsequent revisions;
2. Copies of the respective Principle Contractor's Environmental Site Documentation / Environmental File (See Section 2.5 and 2.6);
3. Copy of specialist studies undertaken;
4. Records of all remediation / rehabilitation activities;
5. Complaints register and Incident register; and
6. 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 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 and Sanitation (DWS) 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.

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

Conservation of Agricultural Resources Act No. 43 of 1983

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 Environmental Management: Biodiversity Act No. 10 of 2004

National Road Traffic Act No. 93 of 1996

National Veldt and Forest Fires Act No.101 of 1998

Nature Conservation Ordinance No. 74 of 1979

Occupational Health and Safety Act No. 85 of 1993

Protected Areas Act 57 of 2003

Road Transportation Act No. 74 of 1977

World Heritage Resource Act No 49 of 1999

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.

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.

The Gauteng Conservation Plan (Version 2), 2005

The Gauteng Conservation Plan or C-Plan has been compiled through the collection of biodiversity data for the Gauteng Province as part of the Gauteng Biodiversity Gap Analysis Project ("the Gauteng BGAP"). This has been analysed to produce the CPlan (Version 2). The purpose of the Gauteng BGAP is to identify and map areas that are of importance to biodiversity protection in Gauteng through a systematic and empirical conservation – planning programme, and to provide recommendations and policy strategies for the conservation and management of these areas. This information is to be used to identify potentially sensitive sites.

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 (especially towards the adjacent Wilds Nature Reserve and private property). 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).
- An ESO, on behalf of the Contractor, is to be appointed to implement this EMPr. The EO 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.

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:

CARENE KRUGER *(PROJECT MANAGER)*

Carene holds and BSc (Honours) Degree in Environmental Management (University of Johannesburg) and has been an EAP for over 6 years. She is employed as a Project Manager at SEF and has been with the company for 4 years. Her working experience varies from small to large scale projects pertaining to master planning, commercial, residential, mining and municipal infrastructure projects. Carene has excellent knowledge of the NEMA and has dealt with legal processes such as the Gautrain Variant Assessment High Court Interdict and other appeal processes. She also worked in the United Kingdom as a commercial recycling advisor and has extensive experience in community upliftment projects obtained in Mozambique. Key projects include: Lonmin Platinum EMPR amendment applications, Wonderboom Airport expansion, Gautrain Variant Assessment EIA, SKA- Meerkat infrastructure and Hazeldean Node Master Plan.

POOGENDRI REDDY (*ENVIRONMENTAL MANAGER*)

Poogendri has obtained a BSc Honours in Zoology from Rhodes University and is currently registered as a Candidate Natural Scientist with the South African Council for Natural Scientific Professions. She has over 6 years of experience with a year and half in environmental management. She is presently an environmental manager at SEF with a broad working knowledge and experience in basic assessments, scoping and environmental impact assessments and public participation processes. In addition, she has compiled mine closure assessments and financial provisions for large resource companies. She is well versed in the relevant environmental, mining, water and waste legislation and has compiled several waste management license and water use license applications.

MANDLA ZUMA *(ENVIRONMENTAL ASSISTANT)*

Mandla has obtained BSc in Environmental Management from the University of Zululand in 2009. He worked with the Department of Environmental Affairs (Oceans and Coasts) as an Intern in the Coastal Conservation Strategies section for four months; where the main responsibilities included looking after coastal information. He has worked with SEF as an Intern for seven months and was later appointed as an Environmental Assistant. Mandla has been assisting in compiling BAs and EIAS and related tasks. He has been involved in tasks requiring good legislation interpretation and also assisting in public and authority consultation.

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 4: DECLARATION OF UNDERSTANDING BY THE ENVIRONMENTAL SITE OFFICER

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 5A (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
Jack Civil		

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
John Doe		

ANNEXURE 5B (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 6 (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 7 (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**