

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

HAMMANSKRAAL BUSINESS PROCESS OUTSOURCING AND TECHNOLOGY PARK

PRE-CONSTRUCTION AND CONSTRUCTION

Prepared for:

Council for Scientific and Industrial Research (CSIR)

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DATE: February 2014

SEF Ref: 505597

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LIST OF ABBREVIATIONS:

CLO	Community Liaison Officer
CSIR	Council for Scientific and Industrial Research
DEA	Department of Environmental Affairs
DWA	Department of Water Affairs
DWAF	Department of Water Affairs and Forestry
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECD	Enterprise Creation for Development
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
ELO	Environmental Liaison Officer
EMPr	Environmental Management Programme
EO	Environmental Officer
ESO	Environmental Site Officer
GDARD	Gauteng Department of Agriculture and Rural Development
I&AP	Interested and Affected Party
IEM	Integrated Environmental Management
MSDS	Material Safety Data Sheet
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMWA	National Environmental Management: Waste Act
NEMAQA	National Environmental Management: Air Quality Act
SANS	South African National Standard
SABS	South African Bureau of Standards
SEF	Strategic Environmental Focus (Pty) Ltd

DEFINITIONS:

Alien species - Plants and animals which do not arrive naturally in an area - they are brought in by humans. Alien plants often force indigenous species out of the area.

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.

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

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

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

Basic Assessment Report - A report presenting the findings of the basic impact assessment process. This report is primarily aimed at reaching closure on the issues and alternatives to be addressed in the BAR.

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.

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 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.

Crew Camp – Facility where the construction crew meets and facilities for them are available here.

Degradation - The lowering of the quality of the environment through human activities, e.g. river degradation, soil degradation.

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

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

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

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

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

Environmental Impact Assessment (EIA) - An Environmental Impact Assessment (EIA) refers to the process of identifying, predicting and assessing the potential positive and negative social, economic and biophysical impacts of a proposed development. The EIA includes an evaluation of alternatives; recommendations for appropriate management actions for minimising or avoiding negative impacts and for enhancing positive impacts; as well as proposed monitoring measures.

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

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

Environmental 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.

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

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 cause damage to plants, animals, their habitat and the well-being of human beings, e.g. waste from factories, detergents, pesticides, hydrocarbons, 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 naturally found in an area.

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

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

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

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

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

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

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

The Method Statements must contain the appropriate detail in order for the EO and Engineer 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 ESO on projects where no EO is present) and Engineer to formalise the approved Method Statement.

Mitigation - Measures designed to avoid, reduce or remedy adverse impacts.

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.

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

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

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

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

Proponent – 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 Environmental Management Programme (EMPr).

Recycling - Collecting, cleaning and re-using materials.

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

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 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.

Sustainability - Being able to meet the needs of present and future resources.

Waste Management – Classifying, recycling, treatment and disposal of waste generated during construction and decommissioning activities.

Wetlands - An area of land with water mostly at or near the surface, resulting in a waterlogged habitat containing characteristic vegetation species and soil types e.g. vleis, swamps.

SECTION 1: INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION:

Strategic Environmental Focus (Pty) Ltd (SEF) has been appointed by the Enterprise Creation for Development (ECD) unit of the Council for Scientific and Industrial Research (CSIR) as independent environmental consultants to compile and submit an Environmental Management Programme (EMPr) to the decision making authority, the Gauteng Department of Agriculture and Rural Development (GDARD) in respect of the proposed Hammanskraal Business Process Outsourcing and Technology Park in Hammanskraal, north of Pretoria.

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, 1998 (Act No. 107 of 1998), as amended (here after referred to as NEMA). 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 and are focussed primarily on co-operative governance, public participation and sustainable development. The EIA Regulations that took effect in August 2010 regulate the procedures and criteria for the submission, processing, consideration and decision on applications for environmental authorisation (EA) of listed activities.

1.2 SCOPE:

The general principles contained within this document apply to the **pre-construction, construction** phases to be associated with the lifecycle of the project proposal.

1.2.1 PRINCIPLES OF THE 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.
- Flexible and responsive. The implementation of the EMPr must respond to new and changing circumstances, i.e. rapid short-term responses to problems or incidents. The EMPr is a dynamic “living” document and thus regular planned review and revision of the EMPr must be carried out.
- Integration across operations. This EMPr must integrate across existing line functions and operational units such as health, safety and environmental departments in a company/ project. This is done to change the redundant mindset of seeing environmental management as a single domain unit.
- Legislation. It is understood that any development project during its construction phase is a dynamic activity within a dynamic environment. The Developer, Engineer, Contractor and Sub-contractor must therefore be aware that certain activities conducted during construction may require further licensing or environmental approval, e.g. river or stream diversions, bulk fuel storage, waste disposal, etc. The Contractor must consult the ER, EO and ECO on a regular basis in this regard.

1.2.2 SITE SPECIFIC INFORMATION:

1.2.2.1 PROPOSED ACTIVITY AND LOCAL CONTEXT

The proponent, the City of Tshwane, proposes to development a Business Process Outsourcing and Technology (BPO&T) Park on portion R/17 of farm Hamanskraal 112JR. The development will first utilise the existing infrastructure on site (which was previously used by the University of Pretoria as and educational campus) and thereafter construct additional buildings and associated infrastructure in three (3) phases. Approximately 4.6 hectares of land will be disturbed for the development (excluding the present infrastructure) and further land will be disturbed for the construction of internal roads and the installation of infrastructure for the provision of bulk service. The total portion of land anticipated to be disturbed is 5 hectares.

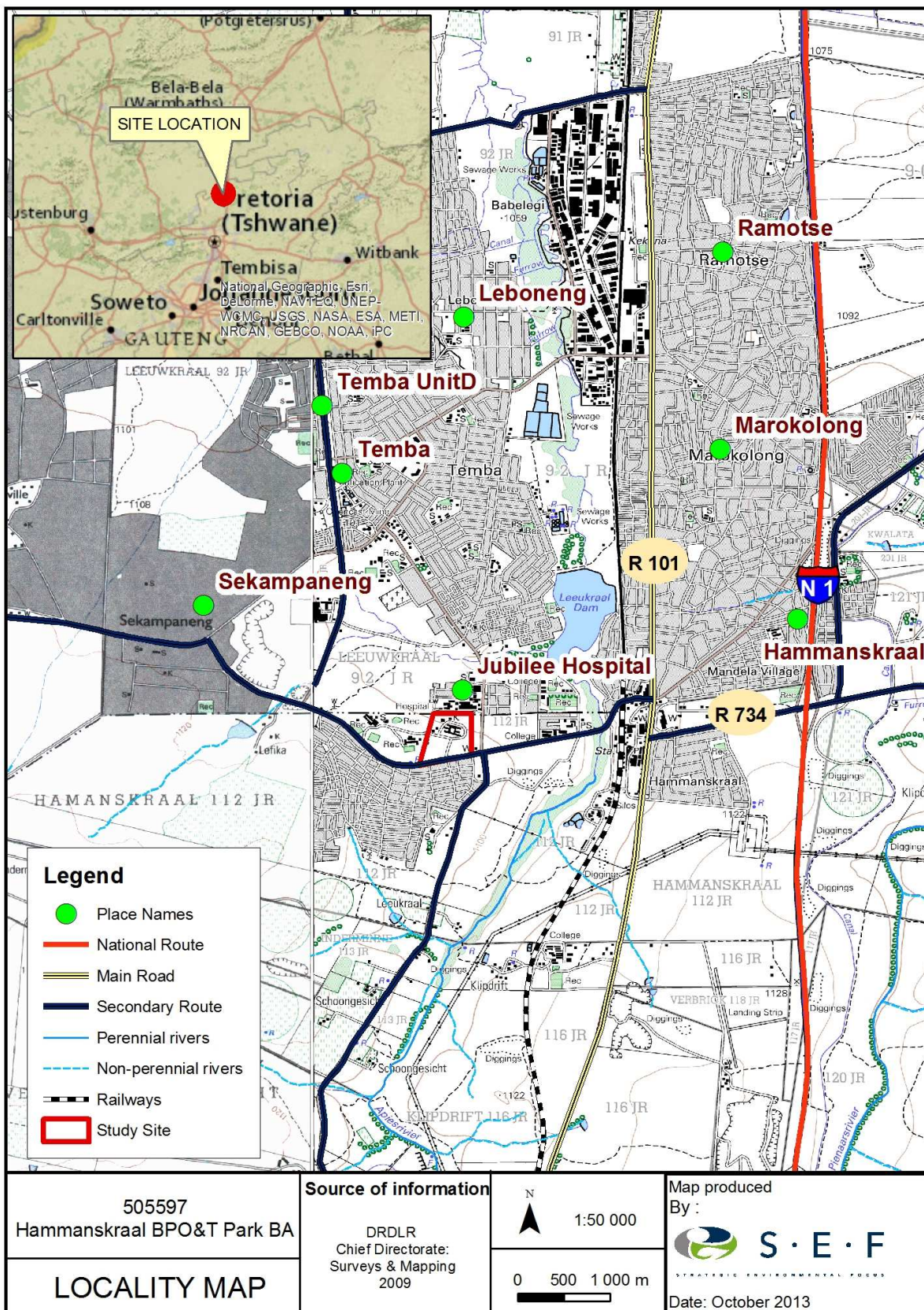


Figure 1: Locality/Aerial Map

1.2.2.2 SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS TO BE ASSOCIATED WITH THE PROPOSED ACTIVITY DURING CONSTRUCTION-

- Soil disturbance and erosion;
- Increased sedimentation;
- Adverse impact on water quality;
- Increased stormwater runoff;
- Temporary increase in ambient noise levels;
- Increased security risk; and
- Increased traffic volumes and congestion;

1.2.3 INTERPRETATIONS:

The implementation of the EMPr is not an additional or “add on” requirement. The EMPr is legally binding through NEMA and the relevant EA. 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) South African National Standard (SANS) 1200 A or SANS 1200 AA (Standard Specifications for Civil Engineering Construction), as applicable.

1.2.4 PROJECT PHASE:

This EMPr is specifically compiled for the period of time prior to commencement of, and activities associated with construction.

1.2.5 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.

Please refer to Table 1 for the relevant functions and responsibilities of the project team.

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

Note: Roles and Responsibilities will be revised pending the EA.

Table 1: Functions and Responsibilities of the Project Team

FUNCTION	ROLE	RESPONSIBILITY
Developer (D)	Proponent ultimately accountable for ensuring compliance to the EMPr and good management practice requirements for the duration of the project	<ul style="list-style-type: none"> • 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 the EMPr for the project. • Providing and giving 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 PM, Contractor and ECO. • Undertaking periodic site visits and inspections to ensure that the environmental requirements are implemented. • Reviewing and commenting on environmental compliance assessments and/or reports. • Giving instructions on any procedures and corrective actions. • Ensuring that the EMPr is fully implemented and remains so, and when necessary is revised and updated. • Reviewing the Complaints Register. • Issuing fines, penalties or suspending work for contravention of the EMPr. • Giving instructions regarding corrective action to the PM/Contractor.
Consulting Engineer (CE)	Contracted by the developer to design and specify the project engineering aspects. Generally the engineer runs the works contract. The CE may also fulfil the role of Project Manager on the proponent's behalf (See PM).	<ul style="list-style-type: none"> • Understanding the EMPr and all its specifications and implications. • Including all relevant EMPr specifications in the tender documents and subcontractor appointments. • 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. • Providing appropriate training on the latest version of the EMPr and all approved Method Statements to all employees, contractors and sub-contractors. Further to keep record of such training (e.g. keep record of the date of training, version of the EMPr the training was for, the employee/sub-contractor trained). • Notifying the Resident Engineer or Engineer's Representative 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. • 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. • Implementing on-site steps to mitigate environmental impacts. • Ensuring that all employees, contractors and sub-contractors employed comply with the requirements and provisions of the EMPr at all times. • Reporting of any serious environmental incidents or impacts to the Developer, PM and ECO

1.2.6 ENFORCEMENT, MONITORING AND AUDITING:

The ECO and full time EO must oversee the implementation of the EMPr.

The ECO must conduct, at a frequency as determined by the Department and stipulated in the relevant EA for the project, independent environmental audits. The audits are to verify the projects compliance with the EMPr and conditions of the EA. Before any construction activities commence, the ECO must compile, for the approval by the Department, an audit checklist based on the contents of this EMPr and conditions of the EA. The ECO must at the request of the Department forward audit reports to the Department at a frequency determined by the Department which must be stipulated in the EA.

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

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

A copy of all ESO and EO monitoring reports, contractor method statements and pro forma documentation (see 1.2.9 & 1.2.11) must be held by the ESO and/or the EO on site and be made available to the Department and or the ECO upon request.

1.2.7 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 at various stages of the project 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.

1.2.8 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 in terms of Section 28 of NEMA;
- The study area must be clearly defined, surveyed and demarcated according to the project authorisation. All workforce members and other construction personnel are not to go beyond the fenced footprint. Landowners are not comfortable when strangers come on to their properties. They will look for reasons to interfere with the construction process and may therefore cause delays in the process that can be very costly to the Contractor;
 - The Contractors must adhere to agreed and approved access points and haul roads;
 - 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 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;
 - All private and public manmade structures 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;
 - Proper documentation and record keeping of all complaints and actions taken;
 - Regular site inspections 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 1.2.8 below);
 - 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; and
 - Environmental Audits to be carried out during and upon completion of construction.

1.2.9 AWARENESS TRAINING:

This EMPr is drafted in accordance to the principles of NEMA, as amended; 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) makes provision that anyone who causes pollution or degradation of the environment is responsible for preventing impacts occurring, continuing or recurring and for the costs of repair of the environment.

One tool to make provision for sustainable development is the awareness making of the workforce on the requirements and commitments of the EMPr and conditions of the EA.

The EO or ESO, are responsible for ensuring everyone part of the project team (on site or design team) is given an environmental awareness induction session which not only clearly defines what the environment is and gives specifics detailing the local environment but outlines the requirements of the EMPr as a management tool to protect the environment.

Refresher courses must be conducted as and when required. The EO or ESO must ensure daily 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. Awareness posters and a hand out must be produced to create awareness throughout the site (as and when necessary).

1.2.10 CONTRACTOR ENVIRONMENTAL METHOD STATEMENTS:

Method Statements are written submissions to the Engineer by the Contractor in collaboration with his/ her ESO, in response to a request by the EO and or Engineer. The Method Statements set out the plant, materials, labour and method that the contractor proposes using to carry out an activity, identified by the EO and/or Engineer. The Method Statements contain the appropriate detail such that the EO 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 EO 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 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 EO 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 attached must be used and method statements for the following activities must be submitted to the EO, ECO and Engineer for approval before construction commences. These include *inter alia*:

- Solid waste management;
- Crew camps and construction lay down areas (if applicable);
- Cement and concrete batching;
- Dust control (if applicable);
- Hydrocarbon and emergency spills procedures;
- Sourcing, excavating, transporting and dumping of fill and spoil material; and
- Emergency fire procedure.

1.2.11 ENVIRONMENTAL INCIDENTS AND COMPLIANTS REGISTER:

All environmental incidents occurring on the site will be recorded by the contractor in an Environmental Incident Register (Refer to Annexure 5) kept on site. These 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 or the ER in conjunction with the ECO will identify and approve remediation actions where necessary.

The Contractor must further also record any complaints received from the affected parties (community, workforce, adjacent landowners, etc.) in a complaints register kept on-site (Refer to Annexure 6). 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 to the complainant must be provided within seven working days.

1.2.12 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.

- Site daily diary / instruction book / incident reports;
- Records of all remediation / rehabilitation activities;
- Copies of EO reports (management and monitoring);
- Environmental Management Programme (EMPr);
- Environmental Authorisation;
- Complaints register; and
- Method statements.

1.2.13 PRO FORMA DOCUMENTATION:

1.2.13.1 PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES-

The following attached *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 Engineer;
- Declaration of understanding by the Contractor;
- Method statements;
- ECO / Engineer approval for method statements; and
- Access negotiations and physical access plan.

1.2.13.2 DURING CONSTRUCTION ACTIVITIES-

The following attached pro forma documentation is to be filled out and maintained. These are binding to the EMPr and project contract. They include *inter alia*:

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

1.2.14 NATIONAL AND PROVINCIAL ACTS, GUIDELINES AND REGULATIONS PROMULGATED THERETO:

The following environmental, developmental and health and safety statutes are applicable to the proposed Hammanskraal BPO&T Park:

- Animals Protection Act, 1962 (Act No. 71 of 1962);
- Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983);
- Hazardous Substances Act, 1973 (Act No. 15 of 1973);
- National Building Regulations and Standards Act, 1977 (Act No. 103 of 1977) [South African Bureau of Standards (SABS) 0400];
- National Environmental Management Act, 1998 (Act No. 107 of 1998);
- National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004);
- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004);
- National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008);
- National Health Act, 2004 (Act No. 61 of 2003);
- National Heritage Resources Act, 1999 (Act No. 25 of 1999)/ World Heritage Convention Act, 1999;
- National Road Traffic Act, 1996 (Act No. 93 of 1996);
- National Water Act, 1998 (Act No. 36 of 1998)/Water Services Act, 1997 (Act No. 108 of 1997); and
- Occupational Health and Safety Act, 1993 (Act No. 85 of 1993);

SECTION 2: CONSTRUCTION PHASE EMPR - IMPLEMENTATION

2.1 PREAMBLE:

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

The following tables (from page 21) form the core mitigation measures appropriate to the pre-construction and construction phases. The tables present the objectives to be achieved and the management actions that need to be implemented in order to mitigate the negative impacts and enhance the benefits of the project. Associated responsibilities, criteria/targets and timeframes are clearly specified.

The ***'pre-construction'*** section of this EMPr, refers to the period of time leading up to and prior to commencement of construction activities, and is included to ensure proactive 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 in the pre-construction phase.

The majority of the potential adverse environmental impacts will have immediate effect during the ***'construction'*** phase (e.g. noise, dust, and water pollution). If the site is monitored on a continual basis during the construction phase, it is possible to identify these impacts as they occur. These impacts will then be mitigated through the measures outlined in this section, together with a commitment to sound environmental management from the project team. The ***"construction"*** section refers to all construction and its operation-related activities that will occur within the approved area 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 method statements stipulated where required.

2.2 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 etc.

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

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 are to action or manage the required mitigation.

2.3 SPECIALIST RECOMMENDATIONS:

As part of the process, some specialist studies were undertaken for the development of the BPO&T Park.

These studies include:

- Phase 1 Heritage Impact Assessment – prepared by African Heritage Consultants cc
- Ecological Assessment – prepared by SEF

The studies listed above have been included as appendices to the draft Basic Assessment Report. It is imperative that the EMPr should be read in conjunction with the specialist reports/inputs as outlined above.

Phase of development	PRE-CONSTRUCTION
Impact / issue	GENERAL PLANNING (A)

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
<p>A1 Project contract and programme</p> <p>i. The EMPr must be included as part of the tender documentation (and included within any service level agreements made) 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.</p> <p>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.</p>	<ul style="list-style-type: none"> Contingencies for minimising negative impacts anticipated to occur during the construction phase Ensure environmental awareness and formalise environmental responsibilities and implementation 	<ul style="list-style-type: none"> Contract records Signed declaration pro forma's 	-	
<p>A2 Appointments and duties of project team</p> <p>i. The contact details for the ECO, ER, EO, Contractor and ESO (as applicable) must be recorded and a copy kept on site. This document must be made available to the approving authority on request.</p> <p>ii. Before construction activities commence, role players must have a clear indication of their role in the implementation of this EMPr as indicated in 1.2.5 Table 1.</p> <p>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.</p>	<ul style="list-style-type: none"> Contingencies for minimising negative impacts anticipated to occur during the construction phase 	<ul style="list-style-type: none"> Contract records Signed declaration pro forma's 	-	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
<p>A3 Method statements</p> <p>i. As required in 1.2.9, certain method statements must be provided by the contractor. All activities which require method statements may only commence once the method statements have been approved by the engineer and or ECO as applicable.</p> <p>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.</p>	<ul style="list-style-type: none"> Contingencies for minimising negative impacts anticipated to occur during the construction phase 	<ul style="list-style-type: none"> Approved method statements and relevant pro forma documents Training records 	As and when required	
<p>A4 Site demarcation and development</p> <p>i. The surveys for the overall project area and construction footprint as approved in the EA must be complete and clearly demarcated before the contractors set up their crew camps or begin construction;</p> <p>ii. All relevant 'general' and 'specific' conditions contained in the EA will be included in the space provided below and included as part of this EMPr when the "declaration of understanding" is signed by the Developer, Engineer and Contractor. The proponent is to sign the space provided.</p>	<ul style="list-style-type: none"> Contingencies for minimising negative impacts anticipated to occur during the construction phase; 	<ul style="list-style-type: none"> Demarcated area's Filled in section of this document 	As and when required	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
<p>A5 Emergencies, non-compliance and communication</p> <ul style="list-style-type: none"> i. The contractor must provide method statements on the protocols to be followed, and contingencies to be put in place for the following potential incidents before construction may begin: Contamination of soils from spills; and fire. ii. Communication in emergencies must follow the prescribed lines of communication. iii. The contractor understands that failure to adhere to the requirements of the EMPr will result in the contractor being responsible for over and above the costs incurred for any remediation required as result of the specific non-compliance. 	<ul style="list-style-type: none"> • Contingencies for minimising negative impacts anticipated to occur during the construction phase 	<ul style="list-style-type: none"> • Method statements 	As and when required	

Phase of development	GENERAL PLANNING	EA reference number	
Impact / issue	Environmental Authorisation Conditions (B)	Proponents signature	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
All relevant 'general' and 'specific' conditions contained in the EA must be included in the space provided once authorisation has been received.				

Phase of development	CONSTRUCTION
Impact / issue	Materials (C)

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
Handling				
<p>C1 Stockpiles (where applicable)</p> <p>i. All stockpiled material must be easily accessible without any environmental damage.</p> <p>ii. All temporarily stockpiled material must be stockpiled in such a way that the spread of materials are minimised.</p> <p>iii. The stockpiles may only be placed within the demarcated areas the location of which must be approved by the ER, EO or ESO.</p> <p>iv. Storm water run-off from the stockpile sites and other related areas must be directed into the storm water system with the necessary pollution prevention measures such as silt traps and may not run freely into the immediate and surrounding environments (if applicable).</p> <p>v. All materials should be stockpiled in areas where it will not significantly interfere and/or alter the natural surface water drainage/flows on site.</p> <p>vi. Stockpiles are to be stabilised if signs of erosion are visible.</p> <p>vii. Soils from different horizons must be stockpiled such that topsoil stockpiles do not get contaminated by sub-soil material.</p> <p>viii. No plant, workforce or any construction related activities may be allowed onto the topsoil stockpiles.</p> <p>ix. Topsoil stockpiles must be clearly demarcated as no-go areas.</p> <p>x. Stockpiles must not be higher than 2m to avoid compaction thereby maintaining the soil integrity and chemical composition (for the topsoil stock piles that will be used for re-vegetation).</p> <p>xi. Bulk construction materials and sub/top soils may only be stockpiled in areas which are to be transformed through development.</p>	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • No visible erosion scars once construction is completed. • The footprint has not exceeded the agreed site in terms of EA, etc. • No signs of sedimentation and erosion. 	Daily	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
<p>C2 Oil and chemicals</p> <p>i. The contractor must provide method statements for the "handling & storage of oils and chemicals", "fire", and "emergency spills procedures".</p> <p>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. These areas must be imperviously bunded with adequate containment (at least 110 % the volume of the fuel – excluding the volume displaced by the tanks) for potential spills or leaks.</p> <p>iii. Drip trays (minimum of 10cm deep) must be placed under all vehicles that stand for more than 24 hours. Vehicles suspected of leaking must not be left unattended, drip trays must be utilised.</p> <p>iv. The surface area of the drip trays will be dependent on the vehicle and must be large enough to contain any hydrocarbons that may leak from the vehicle while standing.</p> <p>v. The depth of the drip tray must be determined considering the total amount/ volume of oil in the vehicle. The drip tray must be able to contain the volume of oil in the vehicle.</p> <p>vi. 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).</p> <p>vii. All spilled hazardous substances must be contained in impermeable containers for removal to a licensed hazardous waste site, (this includes contaminated soils, and drenched spill kit material).</p>	<ul style="list-style-type: none"> • Prevention of pollution of the environment • Minimise chances of transgression of the acts controlling pollution 	<ul style="list-style-type: none"> • No pollution of the environment • No litigation due to transgression of pollution control acts • No complaints from I&APs • Method statements 	Daily	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
<p>C3 Cement</p> <ul style="list-style-type: none"> i. The contractors must provide and maintain a method statement for “cement and concrete batching”. The method statement must provide information on proposed storage, washing & disposal of cement, packaging, tools and plant. ii. The mixing of concrete must only be done at specifically selected sites on mortar boards or similar structures to contain run-off into soils and/or storm water infrastructure. Cleaning of cement mixing and handling equipment must be done using proper cleaning trays. iii. All empty containers must be stored in a specific designated area within the construction site camp and later removed from the site for appropriate disposal at a licensed facility. iv. Any spillage that may occur must be investigated and immediate remedial action must be taken. v. 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. vi. Cement batching areas must be located in consultation with the ER, EO or ECO to ensure residues are contained and that the proposed location does not fall within sensitive areas such as storm water infrastructure, etc. 	<ul style="list-style-type: none"> • Minimise the possibility of cement residue entering into the surrounding environment • Minimise pollution of soil, surface and ground water resources 	<ul style="list-style-type: none"> • No evidence of contaminated soil on the construction site • No evidence of contaminated water resources (when applicable) • Method statement 	<p>Monitored daily</p>	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
<p>C4 DANGEROUS AND TOXIC MATERIALS (Provision of storage facilities)</p> <ul style="list-style-type: none"> i. Materials such as fuel, oil, paint, herbicide and insecticides must be sealed and stored in bermed areas or under lock and key, as appropriate, in well-ventilated areas. ii. Sufficient care must be taken when handling these materials to prevent pollution. Training on the handling of dangerous and toxic materials must be conducted for all staff prior to the commencement of construction. iii. In the event of pollution of any surface or groundwater, the Regional Representative of the DWA must be informed immediately. iv. Storage areas must display the required safety signs depicting “no smoking”, No Naked lights” and “Danger” containers must be clearly marked to indicate contents as well as safety requirements. v. The contractor must supply a method statement for the storage of hazardous materials at tender stage. vi. Material Safety Data Sheets (MSDS) must be prepared for all hazardous substances on site and supplied by the supplier where relevant. MSDS’s must be updated as required. 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • No visible signs of pollution • No litigation due to transgression of pollution control acts 	<p>Monitor daily</p>	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
<p>C5 Bulk Storage of Fuel (if applicable)</p> <ul style="list-style-type: none"> i. Bulk fuel storage tanks on the site shall be on an impervious surface that is banded and able to contain at least 110% of the volume of the tanks. The valve must have a tap and must be inside the banded area where possible. The valve must then be connected to a water – hydrocarbon separator. ii. Bulk fuel storage tanks shall be located such that they do not pose a high risk in terms of water pollution iii. Bulk fuel storage tanks shall be placed so that they are out of the way of traffic, so that the risk of the tanks being ruptured or damaged by vehicles is minimised. 				
<p>C6 Use of dangerous and toxic materials</p> <ul style="list-style-type: none"> i. The contractor must keep the necessary materials and equipment on site to deal with spills/ fire of the materials present should they occur. ii. 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 EO. iii. A record must be kept of all spills and the corrective action taken. 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • No pollution of the environment • No litigation due to transgression of pollution control acts 	As required	

Phase of development	CONSTRUCTION
Impact / issue	Development Site (D)

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
<p>D1 Eating areas and camp followers</p> <p>i. The Contractor must, in conjunction with the EO, or ESO, designate restricted eating areas for eating during normal working hours. Adequate closed refuse bins must be provided and cleaned on a daily basis.</p> <p>ii. No fires are to be lit outside of a facility designed to contain fires. The adequacy and positioning of these structures must be determined in consultation with the EO and ECO.</p> <p>iii. The feeding, or leaving of food, for stray or other animals in the area is strictly prohibited.</p> <p>iv. Camp followers/ informal traders must not be allowed to congregate outside the construction site.</p> <p>v. Litter (even if originating outside the camp) and concrete bags, etc. must be picked up daily and put into suitably closed bins.</p>	<ul style="list-style-type: none"> • Control potential influx of vermin and flies • Neat work place and hygienic environment • Minimise negative social impacts to local residents and businesses 	<ul style="list-style-type: none"> • No visual sign of vermin and flies • No complaints from I&APs 	Once off, monitor daily	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
<p>D2 Toilets and ablution facilities (where applicable)</p> <ul style="list-style-type: none"> 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. Sanitary arrangements must be to the satisfaction of the ECO and the local authority. Toilets must be of the chemical type. 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. Toilet paper dispensers must be provided in all toilets. iii. 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, EO or ECO. iv. 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. v. Toilets out on site must be secured to the ground and have a sufficient locking mechanism operational at all times. 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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) 	<p>As and when required</p>	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
<p>D3 Waste management</p> <p>i. The contractors must provide and maintain a method statement for “solid waste management”. The method statement must provide information on proposed licensed facility to be utilised and details of proposed record keeping for auditing purposes.</p> <p>ii. Waste must be separated into recyclable and non-recyclable waste.</p> <p>iii. Waste such as plastic bags, empty cement bags has to be secured and will not be allowed to enter the Constantia Dam under any circumstances,</p> <p>iv. Any illegal dumping of waste will not be tolerated, this action will result in a fine and if required further legal action will be taken. This aspect must be closely monitored and reported on; proof of legal dumping must be able to be produced on request.</p> <p>v. Bins must be clearly marked for ease of management.</p> <p>vi. Sufficient containers must be strategically located around the construction site to handle the amount of litter, wastes, rubbish, debris, and builder’s wastes generated on the site. The storage of waste with the inclusion of temporary storage shall be in line with the general requirements for the storage of waste as per Section 21 of the National Environmental Management: Waste Act, 2008 (NEMWA), as well as the requirements for the storage of general waste as outline in Section 22 of the aforementioned act.</p> <p>vii. A designated area shall be established at the contractor’s site camp for the storage of hazardous waste items. Such storage area shall have a form of secondary containment and adequately banded to contain any spilled substance. All hazardous waste items shall be managed in an appropriate manner which conform to the Department of Water Affairs and Forestry (DWAF)- <i>Minimum requirements for the handling, classification and disposal of hazardous waste, 2005</i> .</p> <p>viii. 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 and ECO.</p> <p>ix. Chemical containers and packaging brought onto the site must be removed for disposal at a suitable site.</p> <p>x. A skip, with a cover (if possible), must be used to contain refuse from campsite bins, rubble and other construction material.</p>	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<p>Daily</p>	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
<p>xi. The contractor, including all sub-contractors shall take cognisance and adhere to their duty of care in respect of the management waste items generated on site as outlined in Section 16 of NEMWA, 2008.</p>				

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
<p>D4 Dust (where applicable)</p> <p>i. The contractors must provide and maintain a method statement for “dust control”. 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.</p> <p>ii. Potable water should not be used as a means of dust suppression, and alternative measures must be sourced. The use of ‘grey’ 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.</p> <p>iii. The construction camp must be watered during dry and windy conditions to control dust fallout.</p> <p>iv. The generation of dust must be controlled by regular watering of roads and works area, should the need arise. NB: Concrete dust is toxic and damages soil properties. Therefore watering to prevent dust spread must not be done where concrete dust has fallen or it will infiltrate into the soil. Concrete bags must not be allowed to blow around the site and spread cement dust.</p> <p>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 20km/h must be adhered to.</p> <p>vi. Excessive dust generated on site must be reported to the ECO.</p> <p>vii. All forms of dust pollution must be managed in terms of the National Environmental Air Quality Act, 2004 (Act No. 39 of 2004). The contractor should take cognisance of and adhere to the maximum dust fall rates provided for various districts as per the SANS 1929:2011- <i>National Ambient Air Quality, Limits for common pollutants</i> and the Draft National Dust Control Regulations (Notice 309 of 2011) promulgated in terms of the NEMAQA, 2004.</p>	<ul style="list-style-type: none"> • Reduce dust fall out. • Reduce visual impact. • Minimise loss of valuable soil material. 	<ul style="list-style-type: none"> • 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 • Baseline targets not exceeded during regular monitoring of dust counts 	<p>Monitored daily</p>	
<p>D5 Workshop equipment, maintenance and storage (if applicable)</p> <p>i. All maintenance and washing of vehicles and equipment must take place in an area that is equipped with a bund wall and grease trap oil separator. During servicing of vehicles/equipment, a suitable drip tray must be used,</p>	<ul style="list-style-type: none"> • Prevent pollution of the environment • Minimise chance of transgression of the acts controlling pollution • Disposal of hazardous 	<ul style="list-style-type: none"> • No pollution of the environment • No litigation due to transgression of pollution control acts • Method statement 	<p>Monitor daily</p>	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
<p>especially where emergency repairs are done outside the workshop area. Leaking equipment must be repaired immediately/ be removed from site to facilitate repair. All wastes must be collected and removed to an appropriate registered waste site.</p> <p>ii. Workshop areas must be monitored for oil and fuel spills and such spills must be cleaned and remediated to the satisfaction of the EO or ER. Cleaning and remediation must be done with products that are in line with best environmental practice i.e. SUNSORB</p> <p>iii. A method statement is required from the Contractor, tendering for the project to show procedures for dealing with possible emergencies that can occur, such as fire, accidental leaks and spillage.</p> <p>iv. 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.</p> <p>i. The following must be applied:</p> <ul style="list-style-type: none"> •All contaminated soil/yard stone shall be removed and disposed of as hazardous waste at a registered facility. •All spills of hazardous substances must be reported to the ESO, EO, ER or ECO. •The contractor must comply with the regulations of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993). 	<p>substances in an appropriate manner</p>			

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
<p>D6 Noise</p> <p>i. All construction vehicles must be in a good working order to reduce possible noise pollution.</p> <p>ii. Work hours (07:00 – 18:00) during weekdays and Saturdays (08:00-13:00) must be strictly enforced unless permission is given. Permission must not be granted without consultation with the local residents and businesses by the EO. No construction activities will be permitted to take place on Sundays and Public Holidays.</p> <p>iii. 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. The use of silent compressors is a specific requirement.</p> <p>iv. Noisy activities must take place only during working hours. The EO must inform the residents of houses and businesses adjacent to the development in writing 24 hours prior to any planned activities that will be unusually noisy or any other activities that could reasonably have an impact on the adjacent sites. These activities could include, but are not limited to, blasting, piling, use of pneumatic jack-hammers and compressors, bulk demolitions, etc.</p>	<ul style="list-style-type: none"> • Maintain noise levels below “disturbing” as defined in the National Noise Regulations • Minimise the nuisance factor of the development 	<ul style="list-style-type: none"> • No complaints from surrounding landowners or I&APs 	<p>As and when required</p>	

Phase of development	CONSTRUCTION
Impact / issue	Construction (E)

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
<p>E1 Fauna</p> <p>i. All activities on site must comply with the regulations of the Animals Protection Act, 1962 (Act No. 71 of 1962) as amended which deals with the prevention of animal cruelty.</p> <p>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. Poaching is illegal and it must be a condition of employment that any employee caught poaching will be dismissed and/or fined an amount as so decided by the ESO/ECO in accordance with the Animals Protection Act, 1962 (Act No. 71 of 1962) as amended. Employees must be trained on how to deal with fauna species as intentional killing will not be tolerated. In the case of a problem animal e.g. a snake, a specialist must be called in to safely relocate the animal if the EO or ECO is not able to.</p>	<ul style="list-style-type: none"> • Minimise disturbance to animals • Minimise interruption of breeding patterns of birds • Minimise destruction of habitat 	<ul style="list-style-type: none"> • No complaints from Nature Conservation • No litigation concerning applicable animal protection acts • No measurable or visible signs of habitat destruction 	Monitor daily	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
<p>E2 Flora</p> <ul style="list-style-type: none"> i. Existing indigenous vegetation should be incorporated into the development landscape as far as possible. ii. No open fires shall be allowed on site under any circumstances. 	<ul style="list-style-type: none"> • Minimal disturbance to vegetation where such vegetation does not interfere with construction in terms of approvals from the relevant authority • 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 	<ul style="list-style-type: none"> • 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 • No veldt fires started by contractors work force • No claims from landowners for damages due to veldt fires • Method statement 	<p>As and when required</p>	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
<p>E3 Heritage</p> <p>i. In terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999), construction personnel must be alert and must inform the local heritage agency should they come across any additional findings of heritage resources within 24 hours.</p> <p>ii. Should any archaeological artefacts be exposed during construction activities, work on the area where the artefacts were found must cease immediately and the ECO must be notified within 24 hours.</p> <p>iii. Upon receipt of such notification, the ECO will arrange for the excavation to be examined by an Archaeologist.</p> <p>iv. Under no circumstances must archaeological artefacts be removed, destroyed or interfered.</p> <p>v. Any archaeological sites exposed during demolition or construction activities must not be disturbed prior to authorisation by the South African Heritage Resources Agency or the appropriate provincial heritage resource agency.</p>	<ul style="list-style-type: none"> • Limit the destruction of the country's heritage resources • The preservation and appropriate management of new archaeological finds should these be discovered during construction 	<ul style="list-style-type: none"> • No destruction of or damage to newly discovered archaeological sites 	Monitor Daily	
<p>E4 Crime, safety and security</p> <p>i. The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) and the National Building Regulations.</p> <p>ii. The contractor must ensure that all emergency procedures 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.</p> <p>iii. The contractor must ensure that lists of all emergency telephone numbers/ contact persons are kept up to date and that all numbers and names are posted at relevant locations throughout the construction site.</p> <p>iv. 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.</p>	<ul style="list-style-type: none"> • Reduce the risk of potential incidences • Minimise the potential impact on the environment 	<ul style="list-style-type: none"> • No incidences reported 	Monitor daily	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
<p>E5 Visual impact (where practical)</p> <ul style="list-style-type: none"> i. Shade cloth must be utilised to conceal and minimise the visual impact of contractor camps, lay down and storage areas (where practical). ii. Rubble and litter must be removed every two weeks or more often as the need arises and be disposed of at a registered landfill site 	<ul style="list-style-type: none"> • Minimise visual impact 	<ul style="list-style-type: none"> • No complaints from I&APs 	<p>Monitor daily</p>	
<p>E6 Hydrology</p> <ul style="list-style-type: none"> i. 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. ii. Approval must be obtained from the DWA for any activities that require authorisation in terms of Section 21 of the National Water Act, 1998 (Act No. 36 of 1998). 	<ul style="list-style-type: none"> • Minimise pollution of soil, surface and ground water resources in the immediate and surrounding environments • Minimise scarring of the soil surface and land features 	<ul style="list-style-type: none"> • No visible signs of pollution • No visible erosion scarring once construction is completed • Minimum loss of topsoil • No erosion or siltation downstream 	<p>As and when required, monitor daily</p>	

REFERENCES:

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

DEAT (2004a) Environmental Management Plans, Integrated Environmental Management, Information Series 12, Department of Environmental Affairs and Tourism (DEAT), Pretoria.

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, 1998 (Act No. 107 of 1998) [NEMA].

National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) as amended in 2007 [NEMBA].

ANNEXURE 1

DECLARATION OF UNDERSTANDING BY THE DEVELOPER

I, _____

Representing _____

Declare that I have read and understood the contents of the Environmental Management Plan 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 ENGINEER

I, _____

Representing _____

Declare that I have read and understood the contents of the Environmental Management Plan 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 Plan 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 B

METHOD STATEMENT: Crew Camps and Construction Lay Down Areas

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

WHAT CREW CAMPS AND CONSTRUCTION LAY DOWN AREAS ARE REQUIRED ON SITE DURING CONSTRUCTION? (give a brief description of these): * Note: please attach extra pages if more space is required

***Insert additional pages as required**

WHERE ARE THE CREW CAMPS AND CONSTRUCTION LAY DOWN AREAS TO BE LOCATED? (where possible, provide an annotated plan and a full description of the extent of the works): * Note: please attach extra pages if more space is required

***Insert additional pages as required**

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

Start Date:..... **End Date:**.....

HOW ARE CREW CAMPS AND CONSTRUCTION LAY DOWN AREAS TO BE MANAGED? (provide as much detail as possible, including annotated sketches and plans where possible): * Note: please attach extra pages if more space is required

***Insert additional pages as required**

DECLARATIONS for Method Statement: Crew Camps and Construction Lay Down Areas

1) ENGINEER

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:

(Signed)

(Print name)

(Dated)

2) 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:

(Signed)

(Print name)

(Dated)

2) 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

(Signed)

(Print name)

(Dated)

METHOD STATEMENT: Cement and Concrete Batching

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

WHAT WORK IS TO BE UNDERTAKEN? (give a brief description of the works): * Note: please attach extra pages if more space is required

***Insert additional pages as required**

WHERE ARE THE WORKS TO BE UNDERTAKEN? (where possible, provide an annotated plan and a full description of the extent of the works): * Note: please attach extra pages if more space is required

***Insert additional pages as required**

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

Start Date:..... **End Date:**.....

HOW ARE THE WORKS TO BE UNDERTAKEN? (provide as much detail as possible, including annotated sketches and plans where possible): * Note: please attach extra pages if more space is required

***Insert additional pages as required**

DECLARATIONS for Method Statement: Cement and Concrete Batching

1) ENGINEER

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:

(Signed)

(Print name)

(Dated)

2) 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:

(Signed)

(Print name)

(Dated)

2) 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

(Signed)

(Print name)

(Dated)

METHOD STATEMENT: Dust Control

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

WHAT WORK IS TO BE UNDERTAKEN ON SITE THAT COULD GENERATE DUST? (give a brief description of the works): * Note: please attach extra pages if more space is required

***Insert additional pages as required**

WHERE ARE THE WORKS TO BE UNDERTAKEN (where possible, provide an annotated plan and a full description of the extent of the works): * Note: please attach extra pages if more space is required

***Insert additional pages as required**

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

Start Date:..... **End Date:**.....

HOW ARE THE WORKS TO BE UNDERTAKEN SO AS TO MINIMISE AND CONTROL DUST GENERATION ON SITE? (provide as much detail as possible, including annotated sketches and plans where possible): * Note: please attach extra pages if more space is required

***Insert additional pages as required**

DECLARATIONS for Method Statement: Dust Control

1) ENGINEER

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:

(Signed)

(Print name)

(Dated)

2) 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:

(Signed)

(Print name)

(Dated)

2) 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

(Signed)

(Print name)

(Dated)

ANNEXURE 4 H

METHOD STATEMENT: Diesel Tanks and refueling procedures

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

WHAT WORK IS TO BE UNDERTAKEN? (give a brief description of the works): * Note: please attach extra pages if more space is required

***Insert additional pages as required**

WHERE ARE THE WORKS TO BE UNDERTAKEN? (where possible, provide an annotated plan and a full description of the extent of the works): * Note: please attach extra pages if more space is required

***Insert additional pages as required**

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

Start Date:..... **End Date:**.....

HOW ARE THE WORKS TO BE UNDERTAKEN? (provide as much detail as possible, including annotated sketches and plans where possible): * Note: please attach extra pages if more space is required

***Insert additional pages as required**

DECLARATIONS for Method Statement: Diesel Tanks and refuelling procedures

1) ENGINEER

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:

(Signed)

(Print name)

(Dated)

2) 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:

(Signed)

(Print name)

(Dated)

2) 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

(Signed)

(Print name)

(Dated)

ANNEXURE 5

INCIDENT AND ENVIRONMENTAL LOG

ENVIRONMENTAL INCIDENT LOG				
Date	Env. Condition	Comments <i>(Include any possible explanations for current condition and possible responsible parties. Include photographs, records etc. if available)</i>	Corrective Action Taken <i>(Give details and attach documentation as far as possible)</i>	Signature

