ENVIRONMENTAL MANAGEMENT PLAN (EMP)

KALAHARI UMTU SUBSTATION AND POWER LINES

PREPARED FOR:
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Submitted to:
DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND TOURISM
Reference Number: 12/12/20/1264

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STRATEGIC ENVIRONMENTAL FOCUS

DATE: July 2009
SEF Ref. 502073

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ANNEXURES

ABREVIATIONS

DEAT .....Department of Environmental Affairs and Tourism
DWAF .....Department of Water Affairs and Forestry
EA.....Environmental Authorisation
EAP ..... Environmental Assessment Practitioner
ECO.....Environmental Control Officer
EIA.....Environmental Impact Assessment
EMP.....Environmental Management Plan
ESO.....Environmental Site Officer
PC .....Project Coordinator
OA ..... Other Authority
C..... Contractor
D.....Developer
I&AP .....Interested and Affected Parties

DEFINITIONS

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.

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

Contamination - Polluting or making something impure.

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

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

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

Environmental 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 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 policy - 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.

Critically endangered species - Any indigenous species facing an extremely high risk of extinction in the wild in the immediate future.

Endangered species - Any indigenous species facing a high risk of extinction in the wild in the near future, although it is not a critically endangered species.

Vulnerable species - Any indigenous species facing an extremely high risk of extinction in the wild in the medium-term future; although it is not a critically endangered species or an endangered species.

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.

Protected species - Any species which is of such high conservation value or national importance that it requires national protection.

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.

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

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

***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 EMP.

Recycling - Collecting, cleaning and re-using materials.

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

***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.

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.

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.

CITY OF CAPE TOWN: ENVIRONMENTAL MANAGEMENT PROGRAMME (2002) Specification EM – 02/07: ENVIRONMENTAL MANAGEMENT, Ver 5 (03/2002)

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.

National Environmental Management Act 107 of 1998 (NEMA)

SECTION 1: INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

Strategic Environmental Focus (Pty) Ltd, as an independent environmental managers and impact assessors, has been appointed by ESKOM Distribution to compile and submit an Environmental Management Plan (EMP) to the decision making authority; Department of Environmental Affairs and Tourism (DEAT) for the construction of 2x20MVA 132/22kV substation (to be known as Kalahari Umtu substation) and approximately 70km 132 kV sub - transmission line from Ferrum Main Transmission Sub station to the proposed Umtu substation, and another approximated 5.6km 132 kV power line from the proposed Umtu substation to an existing substation in Hotazel. All the developments are within Kgalagadi district municipality of the Northern Cape.

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 Environmental Management Plan (EMP).

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. 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 that took effect in July 2006 regulate the procedures and criteria for the submission, processing, consideration and decision on applications for environmental authorisation of listed activities.

1.2 SCOPE

The general principles contained within this document apply to all **PRE-CONSTRUCTION, CONSTRUCTION and OPERATIONAL** activities.

Principles of this EMP

This EMP 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 EMP to be successful and effective.
- Flexible and responsive. The implementation of the EMP must respond to new and changing circumstances, i.e. rapid short-term responses to problems or incidents. The EMP is a dynamic "living" document and thus regular planned review and revision of the EMP must be carried out.
- Integration across operations. This EMP 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, ESO and ECO on a regular basis in this regard.

1.3 SITE SPECIFIC INFORMATION

1.3.1 Proposed activity and local context

Eskom Distribution intend to constructs a new 132Kv sub - transmission power lines in parallel(21m apart), over a distance of approximately 70km which will run from Ferrum MTS to the proposed Umtu substation and another approximated 5.6km 132kv power line , which will run from the proposed Umtu substation to join Hotazel substation in the Northern cape .

Generally the entire length of the proposed sub - transmission route is in a north westerly direction and traverses the R380 and Umtu railway track respectively. In the north, the proposed power lines cross R31 and head to join the proposed approximated 5.6km 132kv power line from Hotazel to the proposed Kalahari Umtu substation.

Eskom Distribution also intends to constructs a new 2x20MVA 132/22KV substation at the Kalahari Resources (Umtu) site, approximately 5.6km east of existing Eskom's Hotazel substation in Northern Cape. The proposed construction of new Kalahari Umtu substation would be approximately 100m x 100m in size.

The new substation is to be equipped with 1x132kV feeder bay, 132kV busbar and 2x22kV feeder bays. A 132kV feeder bay is also to be installed in Ferrum TS. The project also entails installing necessary control technologies at the new substation and at Ferrum TS, and a 132kV feeder bay in Hotazel DS.

The soil composition of the site is characterised as sand and Tillite. The majority of the site is currently vacant /unspecified and some sections are classified as mining areas while its land capability is classified as Grazing and forestry land. In addition, the terrain of the site is susceptible to erosion and will require contingencies for minimising anticipated erosion occurrence during the construction phase.

1.3.2 Summary of impacts associated with the proposed activity

Potential impacts and key issues identified for the proposed development include:

Biophysical Impacts

- Ecological impacts resulting from clearance of vegetation within the entire footprint of the substation and sub - transmission line;
- Impacts on bird life as a result of servitude clearance and construction of access roads and activities of the crew at the construction camps;
- Impacts on soils and landform due to construction along route.
- Impact on Hydrology and Surface Water Resources due to construction in sensitive hydrological and surfaces water resources;
- Air quality disturbance due to dust generated during construction ;and
- Environmental contamination due to hazardous spillages.

Social Impacts

- Contravention of occupational health and safety Act through non-compliance with requirements of personal protective Equipments;
- Visual and aesthetic impacts resulting from construction of access roads, substations, campsite for crew housing and a cleared servitude;
- Road users' safety during construction of sub - transmission line adjacent to R380 and R31.
- Cultural and Heritage impacts as a result of constructing the towers and substation at a site having historical and cultural significance;
- Impact on Tourism due to construction on high-potential eco-tourism or conservation land; and
- Impacts of noise generated by transformers.

1.4 ROLE PLAYERS AND RESPONSIBILITY MATRIX

In order for the EMP to be successfully implemented, all the role players involved in the project need to co-operate. For this to happen, role players must have a clear understanding of their roles and responsibilities in the project, must be professional, form respectful and transparent relationships, and maintain open lines of communication. The EMP therefore clearly defines possible role players to be involved and indicates their role in the implementation of the EMP.

The role players or the project team may include the Authorities (A), Other Authority (OA), Developer/Proponent (D), Resident Engineer (RE), Environmental Site Officer (ESO), Environmental Control Officer (ECO), Project Coordinator (PC), 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.

Table 1: Functions and Responsibilities of the Project Team

KEY	FUNCTION	RESPONSIBILITY
D	**Developer**	Proponent ultimately accountable for ensuring compliance to the EMP and conditions contained in the Environmental Authorisation (EA). The ECO must be contracted by the developer (full time or part time depending on the size of the project) as an independent appointment to objectively monitor implementation of relevant environmental legislation, conditions of Environmental Authorisations (EA's), and the EMP for the project. The developer is further responsible for providing and giving mandate to enable the ECO to perform responsibilities. The developer must ensure that the ECO is integrated as part of the project team.
PC	**Project Coordinator**	The Project Coordinator has over-all responsibility for managing the project, contractors, and consultants and for ensuring that the environmental management requirements are met. All decisions regarding environmental procedures must be approved by the PC. The PC has the authority to stop any construction activity in contravention of the EMP in accordance with an agreed warning procedure.
RE	**Resident Engineer**	Resident Engineer has to ensure that the duties of the Engineer's site team are carried out on behalf of the Engineer, as per the project procedures. Has the power/mandate to issue site instructions and in some instances, variation orders to the contractor, following request by the ESO or ECO. The RE oversees site works, liaison with Contractor and ECO.
ECO	**Environmental Control Officer**	An independent appointment to objectively monitor implementation of relevant environmental legislation, conditions of Environmental Authorisations (EA's), and the EMP for the project. The ECO must be on site prior to any site establishment and must endeavour to form an integral part of the project team. The ECO must be proactive and have access to specialist expertise as and when required, these include botanist's ecologists etc. Further the ECO must also have access to expertise such as game capture, snake catching, etc. The ECO must conduct audits on compliance to relevant environmental legislation, conditions of EA, and the EMP for the project. The size and sensitivity of the development, based on the EIA, will determine the frequency at which the ECO will be required to conduct audits. (A minimum of a monthly site inspection must be undertaken). The ECO must be the liaison between the relevant authorities and the project team. The ECO must communicate and inform the developer and resident engineer of any changes to environmental conditions as required by relevant authoritative bodies. The ECO must ensure that the registration and updating of all relevant EMP documentation is carried out. The ECO must be suitably experienced with the relevant environmental management qualifications and preferably competent in construction related methods and practices. The ECO must handle information received from whistle blowers as confidential and must address and report these incidences to the relevant Authority as soon as possible. On small projects, where no ESO is appointed, the ECO must convey the contents of this EMP to the Contractor site team and discuss the contents in detail with the Contractor as well as undertake to conduct an induction and an environmental awareness training session prior to site handover to all contractors and their workforce.
C	**Contractor**	The principle contractor, hereafter known as the 'Contractor', is responsible for implementation and compliance with the requirements of the EMP and conditions of the EA's, contract 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 EMP. The contractor is required, where specified, to provide Method Statements setting out in detail how the management actions contained in the EMP will be implemented.

KEY	FUNCTION	RESPONSIBILITY
ESO	**Environmental Site Officer**	The ESO is employed by the Contractor as his/her environmental representative to monitor, review and verify compliance with the EMP by the contractor. This is not an independent appointment; rather the ESO must be a respected member of the contractor's management team. Dependent on the size of the development the ESO must be on site one week prior to the commencement of construction. The ESO must ensure that he/she is involved at **all phases** of the constriction (from site clearance to rehabilitation).
A	**Lead Authority**	The authorities are the relevant environmental department that has issued the Environmental Authorisation. The authorities are responsible for ensuring that the monitoring of the EMP and other authorisation documentation is carried out, this will be achieved by reviewing audit reports submitted by the ECO and conducting regular site visits.
OA	**Other Authority**	Other authorities are those that may be involved in the approval process of an EMP. Their involvement may include reviewing EMP's to ensure the accuracy of the information relevant to their specific mandate. Other authorities may be involved in the development, review or implementation of an EMP. For example if a specific development requires a water use licence for the relevant national authority then that authority should review and comment on the content of the particular section pertaining to that mandate.
EAP	**Environmental Assessment Practitioner**	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".

1.5 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 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 ESO and/or Engineer. The Method Statements contain the appropriate detail such that the ESO and Engineer are able to assess whether the Contractor's proposal is in accordance with the requirements of the EMP. The contractor must sign each Method Statement along with the ESO 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 ESO and Engineer on the understanding that such changes are environmentally acceptable and in line with the requirements of this EMP.

The *pro forma* Method Statements attached must be used and method statements for the following activities must be submitted to the ESO, ECO and Engineer for approval before construction commences.

- Solid waste management

- Crew camps and construction lay down areas
- Workshop and maintenance/cleaning of plant
- Cement and concrete batching
- Dust control
- Hydrocarbon and emergency spills procedures
- Diesel tanks and refuelling procedures
- Sourcing, excavating, transporting and dumping of fill and spoil material
- Topsoil management
- Fire
- Rehabilitation of crew camp and other disturbed areas

1. 6 SITE DOCUMENTATION

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

- Access negotiations and physical access plan
- Site daily diary /instruction book/ Incident reports
- Records of all remediation / rehabilitation activities
- Copies of ESO reports (management and monitoring)
- Environmental Management Plan (EMP)
- Complaints register
- Method statements

1.7 Pro forma documentation

1.7.1 prior to the commencement of construction activities

The following attached *pro forma* documentation is to be filled out and is binding to the EMP and project contract and includes, but is not limited to the following:

- Declaration of understanding by the Proponent
- Declaration of understanding by the Engineer
- Declaration of understanding by the Contractor
- Method statements
- ECO / Engineer approval for method statements
- Access negotiations and physical access plan

1.7.2 During construction activities

The following attached pro forma documentation is to be filled out and maintained. These are binding to the EMP and project contract. They include, but are not limited to, the following:

- Amended Method Statements;

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

1.8 National and Provincial Acts 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.

Animals Protection Act No. 71 of 1962
Provides for the protection of animals.

Atmospheric Pollution Prevention Act No. 45 of 1965
Control of noxious and offensive gases, smoke, dust and vehicular emissions.
DEAT: Regional Air Pollution Control Office

Conservation of Agricultural Resources Act No. 43 of 1983
Control of the utilisation and protection of wetlands, soil conservation, control and prevention of veldt fires, control of weeds and invader plants.
Department of Agriculture

Environment Conservation Act No. 73 of 1989
National Environmental Management Act No. 107 of 1998
Control/prevention of pollution; combating of noise; activities which may have a detrimental effect on the environment, preparation and contents of environmental impact reports.
Department of Environmental Affairs and Tourism, Department of Water Affairs and Forestry, Directorate: Environmental Management of the Provincial Department of Environmental and Cultural Affairs and Sport, Local Authorities

Fencing Act No. 31 of 1963
Clearing of bushes for border fencing, Access to property for fencing.
Department of Agriculture

Forest Act No. 122 of 1984

Hazardous Substances Act No. 15 of 1973
Provides for the control of substances, which may cause injury or ill health to, or the death of human beings.
National Department of Health. Local Authorities may be authorized

Health Act No. 63 of 1977
Control of solid, liquid and gaseous wastes that may pose a health hazard.
Department of Health and Local Authorities

Minerals and Petroleum Resources Development Act No. 28 of 2002

National Act on Forests Act No. 84 of 1998
Control over encroaching, protection of trees on private land, prevention and extinction of fire hazards.
Cape Nature Conservation, Department of Water Affairs and Forestry

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

National Heritage Resources Act No. 25 of 1999

National Road Traffic Act No. 93 of 1996
Provides for road traffic matters which apply uniformly throughout South Africa.
Department of Transport.

National Veldt and Forest Fires Act No.101 of 1998

Fire Protection Associations. Building of fire breaks.
Department of Water Affairs and Forestry

National Water Act No. 36 of 1998
Water Services Act No. 108 of 1997
Diversion or impoundment of rivers. Conservation and use of water. Treatment and disposal of waste, wastewater and effluent. Pollution and pollution emergencies. Water Users & Associations. Dam safety. Registration of boreholes.
Department of Water Affairs and Forestry

Nature Conservation Ordinance No. 74 of 1979
Private Nature Reserves, Conservancies, Certificate of adequate enclosure, translocation and re-establishment of animals. Craft on inland waters. Certification of hunting regulations and protection of flora & fauna.
Cape Nature Conservation

Occupational Health and Safety Act No. 85 of 1993
Controls the exposure of employees and the public to dangerous and toxic substances or activities.
Department of Labour

Road Transportation Act No. 74 of 1977
Department of Transport

World Heritage Resource Act No 49 of 1999
Conservation of national heritage and archaeological material.
South African Heritage Resources Agency.
National Council for Heritage

SECTION 2: CONSTRUCTION PHASE EMP - IMPLEMENTATION

2.1 PREAMBLE

The point of departure for this EMP 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 EMP 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 EMP 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 (see page 22) 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 timeframes are clearly specified.

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

The bulk of 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 EMP 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.

"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 is to action or manage the required mitigation.

SPECIALIST RECOMMENDATIONS

The last part of the table provides specialist recommendations that need to be addressed during the pre-construction and construction phases (See page 45).

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

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
A1 Project Contract and Programme • The EMP 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. • A copy of this EMP 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 EMP.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase • Ensure environmental awareness and formalise environmental responsibilities and implementation	• Contract records • Signed declaration pro forma's	-	
A2 Appointments and Duties of Project Team • The contact details for the ECO, RE, Contractor and ESO 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. • Before construction activities commence, role players must have a clear indication of to their role in the implementation of this EMP as indicated in 1.4 Table 1. • 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 EMP.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase	• Contract records • Signed declaration pro forma's	-	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
A3 Method Statements • As required in 1.5, 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. • Where applicable, the contractor will provide job-specific training on an ad hoc basis when workers are engaged in activities, which require method statements.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase	• Approved method statements and relevant pro forma documents • Training records	As and when required	
A4 Site Demarcation and Development • The surveys for the overall project area and construction footprint as approved in the Environmental Authorisation (EA) must be complete and clearly demarcated and fenced before the contractors set up their crew camps or begin construction. • "No-go" areas such as Non Perennial river, land not to be developed, etc. must be clearly demarcated (e.g. warning tape) and fenced prior to the commencement of construction activities. • All relevant 'general' and 'specific' conditions contained in the Environmental Authorisation (EA) must be included in the space provided below and included as part of this EMP when the "declaration of understanding" is signed by the Developer, Engineer and Contractor. The proponent is to sign the space provided.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase	• Demarcated area's • Filled in section of this document	As and when required	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
A5 Emergencies, Non-compliance and Communication • 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 natural water resources from spills; contamination of soils from spills; and fire. • The contractor must understand that failure to adhere to the requirements of the EMP will result in fines, over and above the costs incurred for any remediation required as result of the specific non-compliance.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase	• Method statements	As and when required	

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

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
The Environmental Authorisation conditions will be included in this section.	•	•		
	•	•		

Phase of development	CONSTRUCTION
Impact / issue	Materials (C)

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
Handling				
C1 Stockpiles • All stockpiled material must be easily accessible without any environmental damage. • All temporarily stockpiled material must be stockpiled in such a way that the spread of materials are minimised. • The stockpiles may only be placed within the demarcated areas the location of which must be approved by the RE, ESO or ECO. • The contractor must avoid vegetated areas that will not be cleared. • Soils from different horizons must be stock piled such that topsoil stockpiles do not get contaminated by sub-soil material. • No plant, workforce or any construction related activities may be allowed onto the topsoil stockpiles. • Stock piles must not be higher than 2m to avoid compaction thereby maintaining the soil integrity and chemical composition.	• 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 agreed site in terms of EA etc. • Minimal invasive weed growth • No signs of sedimentation and erosion	Daily	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
C2 Oil and Chemicals • The contractor must provide method statements for the "handling & storage of oils and chemicals", "fire", and "emergency spills procedures". • 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 1.5 times the volume of the fuel) for potential spills or leaks. • 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. • The surface area of the drip trays will be dependent on the vehicle and must be large enough to catch any hydrocarbons that may leak from the vehicle while standing. • 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). • 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).	• 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 & AP's • Method statements	Daily	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
C3 Cement • 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. • The mixing of concrete must only be done at specifically selected sites on mortar boards or similar structures to contain run-off into soils rocky outcrops, streams and natural vegetation. • Cleaning of cement mixing and handling equipment must be done using proper cleaning trays. • All empty containers must be stored in a dedicated area and later removed from the site for appropriate disposal at a licensed facility. • Any spillage that may occur must be investigated and immediate remedial action must be taken. • 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. • Cement batching areas must be located in consultation with the RE, ESO or ECO to ensure residues are contained and that the proposed location does not fall within sensitive areas such as drainage lines, storm water channels, etc.	• Minimise the possibility of cement residue entering into the surrounding environment • Minimise pollution of soil, surface and ground water resources	• No evidence of contaminated soil on the construction site • No evidence of contaminated water resources • Method statement	Monitored daily	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
C4 DANGEROUS AND TOXIC MATERIALS **(Provision of storage facilities)** • 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. • 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. • In the case of pollution of any surface or groundwater, the Regional Representative of the **Department of Water Affairs and Forestry (DWAF)** must be informed immediately. • 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. • The contractor must supply a **method statement** for the storage of hazardous materials at tender stage. • 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.	• Prevention of pollution of soil, surface and ground water resources in the immediate and surrounding environments • Minimise chances of transgression of the acts controlling pollution	• No visible signs of pollution • No litigation due to transgression of pollution control acts	Monitor daily	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
C5 Storage of Fuels and Oils • The contractors must provide and maintain a method statement for "fuel tanks and refuelling procedures". • Fuel storage tanks on the site must be on an impervious surface that is bunded and able to contain at least 110% of the volume of the tanks. The filler tap must be inside the bunded area where possible and the bund wall must not have a tap or valve. • A Flammable Liquid License must be obtained for diesel volumes greater than 200 litres. • Environmental Authorisation is required for volumes greater than 30 000 litres. • Fuel storage tanks must be placed so that they are out of the way of traffic, so that the risk of the tanks being ruptured or damaged by vehicles is minimised. • Bulk fuel storage areas should be covered during the rainy season.	• Prevention of pollution of soil, surface and ground water resources in the immediate and surrounding environments • Minimise chances of transgression of the acts controlling pollution	• No visible signs of pollution • No litigation due to transgression of pollution control acts • Method statement	Once off, as required	
C6 Use of Dangerous and Toxic Materials • The contractor must keep the necessary materials and equipment on site to deal with spills/ fire of the materials present should they occur. • The contractor must set up a procedure for dealing with spills/ fire, which will include notifying the ECO and the relevant authorities prior to commencing with construction. These procedures must be developed with consultation and approval by the appointed ESO. • A record must be kept of all spills and the 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 (D)

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
D1 Eating Areas • The Contractor must, in conjunction with the ESO, designate restricted eating areas for eating during normal working hours. Adequate closed refuse bins must be provided and cleaned on a daily basis. • 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 ESO and ECO. • The feeding, or leaving of food, for stray or other animals in the area is strictly prohibited. • Litter (even if originating outside the camp) and concrete bags etc. must be picked up daily and put into suitably closed bins.	• 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 & AP's	Once off, monitor daily	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
D2 Toilets and Ablution Facilities • 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. • 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. • 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 RE, ESO or ECO. • The contractor must ensure that toilets moves with the labour force. • 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. • Toilets out on site 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 & AP's 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	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
D3 Waste Management • 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. • Waste must be separated into recyclable and non-recyclable waste, and must be separated as follows: · Hazardous waste: including (but not limited to) old oil, paint, etc, · General waste: including (but not limited to) construction rubble, • 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. This aspect must be closely monitored and reported on; proof of legal dumping must be able to be produced on request. • Bins must be clearly marked for ease of management. • Sufficient closed 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. • Subcontractor(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 and that the subcontractors are bound to the management activities stipulated in this EMP. Proof of this undertaking must be issued to the ECO. • 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 ESO and ECO. • Chemical containers and packaging brought onto the site must be removed for disposal at a suitable site. • A skip, with a cover, must be used to contain refuse from	• Sustainable management of waste by recycling • To keep the site neat and tidy • Minimise litigation and complaints by I&AP's • 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	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
campsite bins, rubble and other construction material.				

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
D4 Dust • 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. • **Potable water must 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. • The construction camp must be watered during dry and windy conditions to control dust fallout. • Dust production must be controlled by regular watering of roads and works area, should the need arise. **NB:** Concrete dust is toxic and damages soil properties. Therefore watering to prevent dust spread must not be done where concrete dust has fallen or it will infiltrate into the soil. Concrete bags must not be allowed to blow around the site and spread cement dust. • In addition to the standard dust suppression measures and where these measures are not sufficient, main access roads and site camps must be surfaced with a temporary surface such as gravel to assist with dust suppression. • At the end of construction, the site camp must be fully rehabilitated by removing the temporary surface, ripping the area to loosen the soil and the area must be re-vegetated with locally indigenous vegetation only, according to the landscape development plan for the project. • 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. • Excessive dust conditions must be reported to the ECO.	• 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 • Baseline targets not exceeded during regular monitoring of dust counts	Monitored daily	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
• Monitoring of dust fallout must be carried out and the records kept on site. Baseline dust measures must be sampled and approved by the RE and ECO prior to the commencement of construction activities. • All forms of dust pollution must be managed in terms of the Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965)				

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
D5 Workshop Equipment, Maintenance and Storage • 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. • Cleaning and remediation must be done with products that are in line with best environmental practice. • *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 and accidental leaks and spillage.* • 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. The following must be applied: • All contaminated soil / yard stone shall be removed and disposed of as hazardous waste at a registered facility or placed in containers to be taken to one central point where bio-remediation can be done. (Bio-remediation should only be an option if an Environmental Authorisation has been issued) • A specialist Contractor shall be used for the bio-remediation of contaminated soil where the required remediation material and expertise is not available on site. • All spills of hazardous substances must be reported to the ESO, RE or 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	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
D6 Noise • Prior to the commencement of any construction activities, a baseline ambient noise survey must be carried out. Equivalent continuous rating levels must be recorded for day-time (06:00 to 22:00) and night-time (22:00 to 06:00). These records must be kept on site. • 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. • All construction vehicles must be in a good working order to reduce possible noise pollution. • Monitoring of noise levels must be conducted during construction and the records kept on site. • Work hours during the construction phase must be strictly enforced unless permission is given. Permission must not be granted without consultation with the local residents and businesses by the ESO. • 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. • Noisy activities must take place only during working hours. The ESO must inform surrounding land owners 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.	• 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&AP's	As and when required	

Phase of development	CONSTRUCTION
Impact / issue	Construction (E)

E1 Crew Camps • The contractors must provide and maintain a method statement for "Crew camps and construction lay down areas". • Accommodation for members of the workforce is not permitted on site unless authorisation has been given in terms of the Environmental Authorisation issued for the site. • Dedicated wash areas must be situated away from watercourses and areas of shallow groundwater. • The contractor's camp must be monitored for dust fallout and dust suppression applied 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. • 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 contained herein for the contractor's camps will apply. • 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. • 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, the 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&AP's • No visible signs of litter • Method statements	Monitor daily	

E2 Fires • The contractors must 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 • Absolutely no burning of waste is permitted. • Fires will only be allowed in **facilities especially constructed for this purpose** within fenced Contractor's camps. Wood, charcoal or anthracite are the only fuels permitted to be used for fires. • The contractor must provide sufficient wood (fuel) for this purpose. • A designated smoking area must be demarcated, away from hazardous substance storage areas. • No wood is to be collected, chopped or felled for fires from private or public property as well as from no-go or sensitive areas within the site and any surrounding natural vegetation.	• Minimise risk of veldt fires • Minimise destruction of natural fauna and flora • Maintain safety on site	• No veldt fires started by the contractor' s workforce • No claims from landowners for damages due to veldt fires • Method statement	Monitor daily	
E3 Erosion and Sedimentation • 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. • All disturbed areas will require rehabilitation must be mulched to encourage vegetation re-growth. Mulch used must be free from alien seed. • These areas must be cordoned off so that vehicles or construction personnel cannot gain access to these areas.	• Minimise erosion damage • Minimise impeding the natural flow of water • Minimise scarring of the soil surface and land features • Minimise disturbance and loss of topsoil • Re-growth of disturbed areas.	• No erosion scars • No loss of topsoil • No interference with the natural flow of water • No visible erosion scars once construction is completed • The footprint has not exceeded the agreed boundaries • All damaged areas successfully rehabilitated	As and when required	

E4 Fauna • All activities on site must comply with the regulations of the Animal Protection Act, 1962 (Act No. 71 of 1962 • 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. 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 large snake a specialist must be called in to safely relocate the animal if the ESO or ECO is not able to. • New sub - transmission lines must be placed as close as possible to the existing sub - transmission lines to increase the visibility of the lines to the birds. • Annual monitoring of the sub - transmission lines must be conducted for determine where collisions with the pylons or cables is taking place. Additional marking may then be necessary for areas where high collision rates are detected • The contractor must screen the route for any breeding activity of birds during construction and should avoid disturbance to the area around the breeding site during the breeding season. The contractor should contact the bird specialist if any breeding birds are found for advice on an appropriate buffer around the breeding site where construction must be avoided. • Environmental induction training and awareness must include aspects dealing in safety with wild animals into on site. Focus on animals such as snakes and other reptiles that often generate fear by telling labour force how to move safely away and to whom to report the sighting. Labour force should also be informed where snakes most often hide so that they can be vigilant when lifting stones etc.	• 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	

E5 Flora • 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 and not be defaced, removed, painted for benchmarks or otherwise damaged, even for survey purposes. The latter can only be done if stipulated in the Environmental Authorisation and must be overseen by the ESO and ECO. Any feature defaced by the contractor must be reinstated to the satisfaction of the ECO and penalties/fines may be imposed by the RE. • New sub - transmission lines must be placed as close as possible to the existing sub - transmission lines. • Search and rescue for Red Data Species and/or for species that can be used for landscaping purposes must be conducted in areas approved and demarcated for construction purposes by qualified, experienced botanists or Zoologists. The specialists involved should ideally be those who were / are involved in the EIA process. The rescued Fauna and Flora must be relocated to suitable conservation areas, protected areas and/or the no-go areas within the site. (Specialists must give input here). • Any corridors to surrounding natural areas must be maintained and protected; these must be demarcated as no-go areas. • A search and rescue operation must take place at the discretion of the ECO prior to site clearance activities. A nursery must be established should the need arise. • 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. • The conditions in the Environmental Management Plan must be adhered to. • Once construction is complete, rehabilitation of un-built areas must be undertaken in order to restore the aesthetic & ecological value of the area. It is recommended that a qualified	• 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	• 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	

landscape architect, qualified botanist and the ECO be consulted with regard to the most appropriate rehabilitation vegetation and structures. Active re-vegetation must take place with locally indigenous vegetation under the supervision of the ECO. • No open fires shall be allowed on site under any circumstances, fires will only be permitted in adequate facility within the crew camp, Forest Act, 1984 (Act No. 122 of 1984).				

E6 Heritage • In terms of the National Heritage Act, 1999 (Act No. 25 of 1999), construction personnel must be alert and must inform the local Council should they come across any findings of heritage resources within 24 hours. • 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. • Upon receipt of such notification, the ECO will arrange for the excavation to be examined by an Archaeologist. • Under no circumstances must archaeological artefacts be removed, destroyed or interfered. • Any archaeological sites exposed during demolition or construction activities must not be disturbed prior to authorisation by the South African Heritage Resources Agency on the appropriate provincial heritage resource agency.	• Limit the destruction of the country's heritage resources • The preservation and appropriate management of new archaeological finds should these be discovered during construction.	• No destruction of or damage to known archaeological sites	Monitor Daily	
E7 No-go / Sensitive Areas • All construction activities must remain within the boundaries of the development area, as demarcated at the start of construction. • The construction footprint must be kept to a minimum must be clearly demarcated (e.g. warning tape) and fenced prior to the commencement of construction activities thus reducing the infringement of the development on surrounding habitats. • No-go areas must be demarcated with fencing/warning tape and signs before any construction activities commence. • Vehicles are only to access the site via the approved access road. No vehicular movement is permitted outside of the 132kV servitude. • Land close to the fenced "no-go" sensitive areas that are to be cleared must first be demarcated and screened for Red Data Species by the ECO and a relevant qualified specialist before construction commences.	• 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	

E8 Access Route/Haul Roads • No unauthorised access is permitted. Any authorised clearing for access roads must be done under the supervision of the ECO. • Any damaged or degradation will be investigated and fines issued, the affected areas must be immediately rehabilitated. • Any work or access near or in a permanent drainage system may have implications in terms of the National Water Act, 1998 (Act No. 36 of 1998), and therefore may well require application for a water use licence. • Planning of any new access routes must be done in conjunction between the contractor, Eskom and the land owner • Access roads must be planned timeously and must be mapped. • The contractor must make sure that the construction of access roads does not trigger activities listed in NEMA Government Notice Regulations 386 & 387 of April 2006. • Existing roads and services must be utilised as far as possible. • 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 runoff water on access roads	As required, monitor daily	

E9 Crime, Safety and Security • No site staff, other than security personnel and skeleton staff will be housed on site unless otherwise stipulated in the Environmental authorisation. 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. • A boundary fence must be erected; this will serve to prevent public access to the site, for public safety and security reasons. The access to the site must be controlled so as to restrict unauthorised personnel from entering the site. 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. • 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. • 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. • 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. • 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. • Construction procedures must make provision for earthing requirements.	• Reduce the risk of potential incidences • Minimise the potential impact on the environment	• No incidences reported	Monitor daily	

E10 Visual Impact • Shade cloth must be utilised to conceal and minimise the visual impact of contractor camps, lay down and storage areas. • The buildings that are to be erected must be aesthetically pleasing and blend into the area as far as possible. • Rubble and litter must be removed every two weeks or more often as the need arises and be disposed of at a registered landfill. • The ECO and 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 & AP's	Monitor daily	

E11 Geotechnical • All trenches and excavation works must be properly backfilled and compacted according to specifications given in sub-clause 5.2.4. Of SABS 1200DA. • Mechanical methods of rock breaking will have noise and dust impacts that must be managed. Method Statements for chemical breaking must be provided by the RE.	• Minimise potential structural faults • Minimise trench collapse	• No visible signs of backfill deterioration or trench collapse	As and when required	

E12 HYDROLOGY • The RE and or the ECO must assess whether regular water sampling of surface and or ground water resources within the immediate and surrounding environment are necessary. Should this be the case, baseline data from sampling must be obtained relevant to the activity and sensitivity of the area. Regular sampling must then be carried out to determine deviations from the baseline data. • Increased run-off during construction must be managed using berms and other suitable structures as required to ensure flow velocities are reduced;. Storm water, wherever possible, should be allowed to soak into the land in the area on which the water fell. • 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. • Approval must be obtained from DWAF for any activities that require authorisation in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998). • No vehicular access is allowed in permanently wet areas. • It must be ensured that all equipment to be used is not the cause irreparable damage to wet areas. The contractor must, where required, use alterative methods of construction in such areas. • "NO ENTRY" signs must be strategically placed along rivers, streams and other natural or man-made drainage lines which are in close proximity to access routes. • No roads are to be cut through river and stream banks as this may lead to erosion causing siltation of streams and downstream dams. Existing drifts and bridges must be used if the landowner gives his consent. Such structures must then be thoroughly examined for strength and durability before they are used.	• Minimise pollution of soil, surface and ground water resources in the immediate and surrounding environments • Minimise impeding the natural flow of water • Minimise the impact on natural water flow dynamics • Minimise scarring of the soil surface and land features • Minimise damage to river and stream embankments	• No visible signs of pollution • No signs of siltation of water courses • No visible erosion scaring once construction is completed • Minimum loss of topsoil • No access roads through river and stream banks • No visible erosion scars on embankments once construction is completed • No erosion or siltation downstream • No deviation from baseline data during regular sampling	As and when required, monitor daily	

E13 Soil • The contractors must provide and maintain a method statement for “management of topsoil”. • 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, stockpiles, access roads, construction camps and lay down areas. Topsoil must be stripped after search and rescue (Fauna and Flora) has been conducted and clearing of woody vegetation and before excavation or construction commences. • New sub - transmission lines must be placed as close as possible to the existing sub - transmission lines. • The removal of plant material must be kept to a minimum. A permit must be obtained to remove Camel Thorn trees. • Topsoil must be deemed to be the top layer of soil containing organic material, nutrients and plant seeds. For this reason it is an extremely valuable resource for the rehabilitation and vegetation of disturbed areas. • 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. • 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. • All topsoil must be removed and stockpiled on the site. • However, the use of topsoil for rehabilitation contaminated by the seed of alien vegetation (e.g. blackjacks, etc.) must not be permitted unless a programme to germinate the seed and eradicate the seedlings is drawn up and approved, or some other mitigatory feature is found. This must be approved by the ECO.	• Minimise scaring of the soil surface and land features • Minimise disturbance and loss of soil • Minimise construction footprint • Minimise sedimentation of nearby drainage lines • Maintain the integrity of topsoil’s for future landscaping and rehabilitation • Containment of invasive plant growth	• No visible erosion scars once construction is completed • The footprint has not exceeded the agreed site in terms of EA etc. • Minimal invasive weed growth • No signs of sedimentation and erosion • Method statement	Daily	

• Single handling is recommended. Stock piles must not be higher than 2m to avoid compaction. • Dust suppression is necessary for stockpiles older than a month – with either water or a biodegradable chemical binding agent. • Backfilling must be undertaken in such a way that the final contours blend with the surrounding environment. • Remediated slopes must be graded to preferably 1:2 • Slopes can then be capped with topsoil. This requires a minimum layer of 100 mm in most areas • Construction during the rainy season (November to March) should be closely monitored and controlled. • Disturbed surfaces to be rehabilitated must be ripped and the area must be backfilled with excavated material from the site. • The conditions in the Environmental Management Plan must be adhered to.				

Phase of development	CONSTRUCTION	EAP	
Impact / issue	Specialist requirements (F)	Proponents signature	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
F1 Landscape and Visual Impact **Sub – transmission towers** • Avoid crossing over or through ridges, rivers, pans or any natural features that have prominent visual value. This also includes centres of floral endemism and areas where vegetation is not resilient and takes extended periods to cover; • Where practically possible, provide a minimum of 1 km buffer in area between the sub - transmission line and sensitive visual receptors ;and • Rehabilitate disturbed areas around pylons as soon as practically possible after construction. **Access route** • Construction vehicles movement must be restricted on existing access roads where possible; • Where new access roads are required, the disturbance area should be kept as small as possible; • Locate access routes ; • Construction activities must avoid crossing over or through ridges, rivers, pans or any natural features that have prominent visual value. This also include centres of floral endemism and areas where vegetation is not resilient and takes extended periods to cover; • Maintain no or minimum cleared road verges; • Access routes should be located on the perimeter of	Minimise visual impact Minimise loss of topsoil and enhancement of erosion Minimise fauna and flora displacement by destruction of natural habitats To restrict extended periods of exposed soil. To limit modification to the topography and to avoid the removal of established vegetation.	No erosion on access roads after completion of construction No loss of topsoil due to runoff water on access roads No complaints from I & AP's	As required, monitor daily	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
disturbed areas such as cultivated/fallow lands as not to fragment intact vegetated areas; and • Avoid clearing vegetation for a road in a continuous straight line. Alternatively, curve the road in order to reduce the visible extent of the cleared corridor. **Cleared servitude** • Locate the alignment and the associated cleared servitudes so as to avoid the removal of established vegetation; and • Avoid a continuous linear path of cleared vegetation that would strongly contrast with the surrounding landscape character. Feather the edges of the cleared corridor to avoid a clearly defined line through the landscape. **Construction camps and lay down yards** • If practically possible, locate construction camps in areas that are already disturbed or where it isn't necessary to remove established vegetation like for example, naturally bare areas; • Utilise existing screening features such as dense vegetation stands or topographical features to place the construction camps and lay-down yards out of the view of sensitive visual receptors; • Keep the construction sites and camps neat, clean and organised in order to portray a tidy appearance; and • Screen the construction camp and lay-down yards by enclosing the entire area with a dark green or black shade cloth of no less than 2 m height.				

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
Substation • Due to the existing landscape character of the area of Umtu substation, tree planting with the aim of screening the substation should be undertaken.				
F2 Avifaunal Impact • All identified high collision risk sections of power line must be marked with a suitable anti collision marking device. • All pole tops should be fitted with the standard Eskom perching Bracket. • All vehicles and machinery should keep to the site and not create any new roads unless absolutely necessary. • During construction the contractor or Environmental Control Officer must screen the route for any nest which indicate breeding activity of birds in the area and should avoid disturbance to the area around the breeding site during the breeding season. The contractor should contact the bird specialist if any breeding birds are found for advice on an appropriate buffer around the breeding site where construction must be avoided. • Once exact tower positions have been surveyed and pegged, the information must be supplied to Endangered Wildlife Trust (EWT) in order to identify exact spans requiring marking.	Minimise collision of birds with overhead cables. Minimise electrocution of birds on poles. Minimise habitat destruction during construction and maintenance. Minimise disturbance of birds during construction and maintenance.	No birds are killed as a result of collision with cables. Minimum destruction of birds' habitat.	As required, monitor daily	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
F3 Soil and Agricultural Potential • As the main farming activity within the study area is livestock farming, specifically of small stock, the veld condition needs to be maintained during the construction phase as to not reduce the already poor quality veld.	• Minimise destruction of vegetation	• No destruction of vegetation	Monitor daily	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
F4 Heritage Assessment • Avoid areas with graves • If the contractors and workers come across any heritage artefacts they must report them immediately.	• Limit the destruction of the country's heritage resources	• No destruction of or damage to known archaeological sites	monitor daily	

Phase of development	OPERATIONAL	EAP	
Impact / issue	General (G)	Proponents signature	

G1 Storm Water Management • Storm water, wherever possible, must be allowed to soak into the land in the area on which the water has been discharged. • The storm water system, especially the discharge points, must be inspected and damaged areas must be repaired if required. • Where vegetation has been utilised as part of the storm water management system, it is important to ensure that the vegetation is maintained and does not die, as this is essential for effective infiltration. • For all maintenance undertaken reference must be made to recommendations in the engineer's reports and or the approved storm water management plan. • All maintenance activities must be monitored to ensure that no environmental damage occurs. All damage must be mitigated immediately.	• Minimise pollution of soil, surface and ground water resources • Minimise the potential loss of topsoil • Minimise the potential of flooding of the development, or its neighbouring properties	• No evidence of pollution at the discharge points • No evidence of silt build-up at the discharge points • No complaints from I & AP's		As and when required Monitor seasonally

G2 Atmospheric Pollution **Air pollution** • All forms of dust/air pollution must be managed in terms of the Atmospheric Pollution Prevention Act, 1965 (**Act No.** 45 of 1965), this includes the control of noxious and offensive gases, smoke, dust and vehicular emissions • Under no circumstances may heavy smoke be released into the air. **Light pollution** • Night time light sources must be directed away from, conservation areas, naturally vegetated areas, as this may be the cause of ecological disturbance. **Noise pollution** • Noise levels shall be kept within acceptable limits, these are determined in terms of the relevant local by laws.	• Reduce visual impact • Minimise chances of transgression of the acts controlling pollution	• No complaints from surrounding residents and businesses	Monitor daily	

G3 Safety and Security • Boundary wall if present must be regularly inspected and maintained to prevent any damage. • All fencing on site must be managed in terms of the **Fence Act No. 31 of 1963** • All maintenance and repair work must be done in accordance with **National Building Regulations and Standards Act 103 of 1977** • Maintenance work must not be the cause of environmental damage. Any environmental damage caused must be investigated and mitigated immediately. • Where Electric fences are installed, these must be monitored to ensure that animals have not been trapped. If animal fatalities have occurred these must be investigated and the services of a qualified specialist (bird, reptile…) must be employed to implement the correct management action to prevent further fatalities. • An emergency plan (including fire management) must be developed and implemented; the relevant authority must approve this plan. Ensure that all fire extinguishers are replaced on or before their expiry dates. Ensure that pump devices are in good working order.	• Reduce the risk of potential incidences • Minimise litigation and complaints by I&AP's	• No complaints from surrounding residents and businesses		
G4 Landscape Maintenance • All alien invasive plant species must be removed for disposal at a registered organic waste transfer facility.	• Reduce visual impact	• EMP pro forma documentation	As and when required Monitor seasonally	

G5 Infrastructure Maintenance • The Kalahari Umtu Substation and Power lines must be maintained in accordance with engineer's specifications.	• Reduce visual impact • Minimise pollution of soil, surface and ground water resources	• No complaints from surrounding residents and businesses • No pollution of the environment	As and when required Monitor as part of a monthly maintenance inspection/schedule	
G6 Upgrades and Renovations • Were civil contractors or works are required within the development for upgrading and renovation activities, the planning and construction EMP here in must be implemented.	• Contingencies for minimising negative impacts anticipated to occur during construction activities	• EMP pro forma documentation	As and when required	

ANNEXURE 1 (SAMPLE)

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 (SAMPLE)

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 (SAMPLE)

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: _____

METHOD STATEMENT: Solid Waste Management

CONTRACT:…… **DATE**:……

WHAT WORK IS TO BE UNDERTAKEN? [give a brief description of the works to be undertaken on site that will generate waste (hazardous and non-hazardous wastes)]: * 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

METHOD STATEMENT: Solid Waste Management (contd.)

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

Start Date:…….. **End Date:**……

HOW IS WASTE TO BE MANAGED 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

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:

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**

METHOD STATEMENT:

Crew Camps and Construction Lay Down Areas (contd.)

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 (contd.)

(SAMPLE)

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:

Workshop and Maintenance/Cleaning of Plant

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 WORKSHOPS AND CLEANING BAYS 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

METHOD STATEMENT:

Workshop and Maintenance/Cleaning of Plant (contd.)

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

Start Date:…….. **End Date:**……

HOW ARE WORKSHOPS AND PLANT MAINTENANCE/CLEANING TO BE MANAGED DURING CONSTRUCTION? (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

Workshop and Maintenance/Cleaning of Plant (contd.) (SAMPLE)

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

METHOD STATEMENT:

Cement and Concrete Batching (contd.)

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 (contd.) (SAMPLE)

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**

METHOD STATEMENT: Duct Control (contd.)

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 (contd.) (SAMPLE)

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:

Hydrocarbon and Emergency Spill Procedure

CONTRACT:…… **DATE**:……

WHAT HAZARDOUS SUBSTANCES (INCL. FUELS) ARE TO BE STORED ON SITE? (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 THESE SUBSTANCES TO BE STORED ON SITE? (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**

METHOD STATEMENT:

Hydrocarbon and Emergency Spill Procedures (contd.)

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

Start Date:…….. **End Date:**……

HOW ARE HAZARDOUS SUBSTANCES TO BE MANAGED TO AVOID SPILLAGES AND WHAT EMERGENCY PROCEDURES ARE TO BE IMPLEMENTED IN CASE OF A SPILLAGE?
(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

Hydrocarbon and Emergency Spill Procedures (contd.) (SAMPLE)

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:

Diesel Tanks and Re-fuelling Procedures

CONTRACT:…… **DATE**:……

WHAT WORK IS TO BE UNDERTAKEN? (give a brief description of the number and capacity of diesel tanks to be kept on site): * 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**

METHOD STATEMENT:

Diesel Tanks and Re-fuelling Procedures (contd.)

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

Start Date:…….. **End Date:**……

HOW ARE DIESEL TANKS TO BE MANAGED AND RE-FUELLING 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 Re-fuelling Procedure (contd.) (SAMPLE)

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:

Sourcing, Excavating, Transporting and Dumping of Fill and Spoil Material

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**

METHOD STATEMENT:

Sourcing, Excavating, Transporting and Dumping of Fill and Spoil Material (Contd.)

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

Sourcing, Excavating, Transporting and Dumping of Fill and Spoil Material (Contd.)

(SAMPLE)

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:

Topsoil Management

CONTRACT:…… **DATE**:……

WHAT WORK IS TO BE UNDERTAKEN? (give a brief description of the works to be undertaken that require topsoil to be stripped): * 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

METHOD STATEMENT:

Topsoil Management (contd.)

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

Start Date:…….. **End Date:**……

HOW ARE TOPSOIL STOCKPILES 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

Topsoil Management (contd.) (SAMPLE)

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:

Fire Management

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

METHOD STATEMENT:

Fire Management (contd.)

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

Fire Management (contd.) (SAMPLE)

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:

Rehabilitation of Crew Camps and Other Disturbed Areas

CONTRACT:…… **DATE**:……

WHAT WORK IS TO BE UNDERTAKEN? (give a brief description of works to be undertaken that may result in the need for rehabilitation of the affected areas): * 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**

METHOD STATEMENT:

Rehabilitation of Crew Camps and Other Disturbed Areas (contd.)

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

Start Date:…….. **End Date:**……

HOW ARE THE REHABILITATION 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

Rehabilitation of Crew Camps and Other Disturbed Areas (contd.)

(SAMPLE)

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: _____

INCIDENT AND ENVIRONMENTAL LOG

ENVIRONMENTAL INCIDENT LOG				
Date	**Env. Condition**	**Comments** *(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**