ESKOM RDR10/126 KIMBERLEY DS – HOMESTEAD 132kV POWERLINE, KIMBERLEY, NORTHEN CAPE

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

PRE-CONSTRUCTION & CONSTRUCTION AND OPERATIONAL

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ANNEXURES

ABREVIATIONS

DEA ..... Department of Environmental Affairs
NC DTE&C ..... Northern Cape Department of Tourism, Environment and Conservation
DWA ..... Department of Water Affairs
EA.....Environmental Authorisation
EAP ..... Environmental Assessment Practitioner
ECO.....Environmental Control Officer
EIA.....Environmental Impact Assessment
EMPr..... Environmental Management Programme
I&AP .....Interested and Affected Parties
NEMA .....National Environmental Management Act, 1998 (Act No.107 of 1998)
RE……..…….Resident Engineer

DEFINITIONS

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

Alternative - A possible course of action, in place of another, that would meet the same purpose and need defined by the development proposal. Alternatives considered in the EIA process can include location and/or routing alternatives, layout alternatives, process and/or design alternatives, scheduling alternatives or input alternatives.

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

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

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

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

Contamination - Polluting or making something impure.

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

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.

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

Indigenous species - Plants and animals that are naturally found in an area.

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

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

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

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

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 EMPr.

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.

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)

1.1 INTRODUCTION

Strategic Environmental Focus (Pty) Ltd, as independent environmental managers and impact assessors have been appointed by the Eskom, to compile and submit an Environmental Management Programme (EMPr) to the decision making authority; the National Department of Environmental Affairs (DEA).

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

The IEM guidelines 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 (Act No. 73 of 1989) [ECA], and is focussed primarily on co-operative governance, public participation and sustainable development. The Environmental Impact Assessment (EIA) Regulations that took effect in August 2010 regulate

the procedures and criteria for the submission, processing, consideration and decision on applications for environmental authorisation of listed activities.

1.2 SCOPE

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

1.2.1 Principles of this EMPr

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

- Continuous improvement. The project proponent (or implementing organisation) must commit to review and to continually improve environmental management, with the objective of improving overall environmental performance.
- Broad level of commitment. A broad level of commitment is required from all levels of management as well as the workforce in order for the development and implementation of this EMPr to be successful and effective.
- Flexible and responsive. The implementation of the EMPr must respond to new and changing circumstances, i.e. rapid short-term responses to problems or incidents. The EMPr is a dynamic "living" document and thus regular planned review and revision of the EMPr must be carried out when necessary.
- Integration across operations. This EMPr must integrate across existing line functions and operational units such as health, safety and environmental departments in a company/project. This is done to change the redundant mindset of seeing environmental management as a single domain unit.
- Legislation. It is understood that any development project during its construction phase is a dynamic activity within a dynamic environment. The Developer, Engineer, Contractor and sub-contractor must therefore be aware that certain activities conducted during construction may require further licensing or environmental approval, e.g. river or stream diversions, bulk fuel storage, waste disposal, etc. The Contractor must consult the ER and ECO on a regular basis in this regard.

1.2.2 Site specific information

1.2.2.1 Proposed activity and local context

The proposed powerline is to be installed to the north-east and north of the Kimberley (Sol Plaatjie Municipality) designated urban edge. The proposed alignment encompasses three different sectors of ground. These three sectors are the:

1) De Beers Sector: from the KDS substation to the Kenilworth industrial and housing area – this sector lies within the De Beers property. The De Beers Sector comprises substantially natural Kalahari thornveld

(areas of tall local grasses with interspersed thorn trees) with no important wetland areas.

2) Industrial Sector: the sector between Kenilworth and the main North-South railway line runs through, or along the edge of, an industrial zone. The Industrial Sector has been substantially or totally transformed and care will have to be taken during construction not damage any existing structures or impede existing operations.

3) Kamfers Sector: From the North-South railway to the Homestead substation. The Kamfers Sector lies close to Kamfers Dam one of the most important wetlands for birds in South Africa and a breeding area for the Lesser Flamingo. The area is however largely transformed and the natural vegetation is degraded. Widespread illegal dumping is taking place in this area.

The proposed structures are described below:

Kimberley Distribution Substation (KDS).

- Install a new complete 132kV feeder bay and use the spare 132kV feeder bay at KDS. (2x132kV busbar isolators, 1x132kV breaker, 3x132kV CT's, 132kV surge arrestors and 1x132kV line isolator.)
- The installation of the new feeder bay can be accommodated within the existing footprint of the KDS and no special mitigation measures are required.

Kimberley DS to Homestead new powerline.

- Construct a new 132kV Kingbird powerline (template temperature at 60ºC) approximately 13.5km long between the Kimberley DS and Homestead substations.
- Install fibre optic on line for communication.
- The servitude required for the new powerline is 31m.

Homestead Municipal Substation (HMS).

- Install a new complete 132kV feeder bay. (2x132kV busbar isolators, 1x132kV breaker, 3x132kV CT's, 132kV Surge Arrestors 1x132kV line Isolator.)
- Extend existing 132kV to a double busbar.
- Install a new complete 80MVA 132/66kV transformer bay (2x132kV busbar isolators, 1x132kV breaker, 3x132kV CT's, 3x132kV SA, 1x80MVA 132/88kV trfr, 22000/400V Aux trfr, 3x66kV SA, 3x66kV CT's, 1x66kV breaker and 2x66kV busbar isolators)
- Install three 66kV CT's and 1x66kV breaker on the existing transformer (trfr2).
- Install a new complete 66kV feeder bay to supply customer. (2x66kV busbar isolators, 1x66kV breaker, 3x66kV CT's, 66kV Surge Arrestors 1x66kV line Isolator.)

- Again the upgrades and newly installed equipment can be accommodated in the existing footprint of the HMS and the site will not be extended.

Powerline structure information:

Poles lengths vary from 18m-24m. The depths of poles are between 1.5m-2m. Span lengths between poles are between 225m-250m.These parameters all varies due to the relationship between the structure, the terrain transversed, ground clearance requirements, geology, etc.

Please note that these structures can be used in any non-specific sequence. The application of the structures is usually applied as follow:

1. The mono-pole guyed intermediate suspension structures (D-DT-7641) are normally installed at obvious rocky terrains, where the foundations can have a huge cost impact.
2. The mono-pole self supporting intermediate suspension structures (D-DT-7649) are the preferred application due to its small footprint.
3. The mono-pole angle suspension structures (D-DT-7613) are used on slight angles up to 23º.
4. The mono-pole strain structures (D-DT-7615) can be used as 0 º in-line strainers with four diagonal stays and at angle from 1 º to 110 º with a variety of stay configurations to suit the specific application. The structure can also be used as a terminal in situations where the line which approaches the substation feeder bay is at an angle larger than 45º.
5. The H-pole (D-DT-7805; 7808; 7811 and other structures from the 78-Series) are used for horizontal applications to cross over or under existing powerlines where clearances are a problem and are used as terminal structures with an in-line approach to the substation feeder bay.
6. The 3-pole strain structures (D-DT-7618) are normally used at very long spans crossing rivers, valleys, etc. These are very expensive structures therefore it is not used very often.

For areas where the proposed line will be a single powerline route, the total servitude width is 31m with a building restriction from the servitude centre line of 15.5m. Where the proposed line will run parallel to an existing power line the minimum separation between powerlines is 21m and the total servitude width is 52m. Foundations will be dug along the route for the most suitable pole structures for the site requirements. The foundations will be filled with cement where appropriate and backfilled. Backfilling will be done with suitable soils to ensure settling without voids (no large rocks or stones can be used; all soil will be sifted through an 80mm mesh). All material used for compacted backfill will be deposited in horizontal layers (approximately 300mm thick). Topsoil (stockpile separately from other soils) will be the final backfilling layer.

1.2.2.2 Summary of impacts associated with the proposed activity

The potential impacts of the construction phase are summarised as follows:

- Disturbance to indigenous vegetation;
- Soil erosion;
- Dust generation;
- Hydrocarbon spills;
- Waste generation;
- Visual impact;
- Noise impacts; and
- Avifaunal impacts (disturbance of birds through the increased activity associated with construction).

The potential impacts of the operational phase are summarised as follows:

- Visual impact; and
- Avifaunal impacts (possible collusion of waterbirds, especially Lesser Flamingoes with the powerline during night time flights).

1.2.2.3 Eskom Distribution environmental management policy and commitments

Eskom is committed to:

- Continually improve environmental performance.
- Comply with applicable legislation and regulations as well as Eskom Holdings policies and guidelines as a minimum.
- Prevent pollution of the environment.

1.2.3 Interpretations

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

a) General project specifications; and
b) SANS 1200 A or SANS 1200 AA, as applicable.

However, to ensure sound environmental practice, the measures as described in this EMPr should be implemented for the full operational life of the development.

1.2.4 Project phase

This EMPr is specifically compiled for the period of time prior to commencement of and activities associated with construction of the above mentioned activity and the operational phase of the development.

If and when applicable, where specific activities of the operation of the development fall outside of the general principles contained herein, further 'activity – specific' EMPr's will be attached by the engineer or the environmental site officer as appendices to this document.

1.2.5 Role players and responsibility matrix

In order for the EMPr to be successfully implemented, all the role players involved in the project need to co-operate. For this to happen, role players must clearly understand their roles and responsibilities in the project, must be professional, form respectful and transparent relationships, and maintain open lines of communication.

Potential role players or project teams will include the Authorities (A), Developer/Proponent (D), Consulting Engineers (CE), Engineers Representative (ER), Environmental Control Officer (ECO), Contractors (C), Environmental Site Officer (ESO) 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 (Employer)**	Proponent ultimately accountable for ensuring compliance to the EMPr 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 EA, and the EMPr 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.
CE	**Consulting Engineer**	Contracted by the developer to design and specify the project engineering aspects. Generally the engineer runs the works contract. The CE may also fulfil the role of Project Manager on the proponent's behalf (See PM).
ER	**Engineers Representative**	The consulting engineer's representative on site. Has the power/mandate to issue site instructions and in some instances, variation orders to the contractor, following request by the ECO. The ER 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 EA, and the EMPr 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, ecologist's etc. (Further the ECO must determine the availability of expertise such as game capture, snake catching, etc in the area). The ECO must conduct audits on compliance to relevant environmental legislation, conditions of EA, and the EMPr 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 consulting engineers of any changes to environmental conditions as required by relevant authoritative bodies. The ECO must ensure that the registration and updating of all relevant EMPr 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. The ECO must convey the contents of this EMPr 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.

KEY	FUNCTION	RESPONSIBILITY
C	**Contractor**	The principle contractor, hereafter known as the 'Contractor', is responsible for implementation and compliance with the requirements of the EMPr 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 EMPr. The contractor is required, where specified, to provide Method Statements setting out in detail how the management actions contained in the EMPr will be implemented.
ESO	**Environmental Site Officer**	The ESO is employed by the Contractor as his/her environmental representative to monitor, review and verify compliance with the EMPr by the contractor. This is not an independent appointment; rather the ESO must be a respected member of the contractor's management team. 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 construction (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 EMPr and other authorisation documentation is carried out, this will be achieved by reviewing audit reports submitted by the ECO and conducting regular site visits.
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".

1.2.6 Enforcement, monitoring and auditing

Due to the project spanning areas of natural vegetation, an ECO should be appointed to monitor compliance with the EMPr and advice on sound environmental management of the site. The ECO must conduct, at a frequency as determined by the Department and stipulated in the relevant Environmental Authorisation (EA) for the project, independent environmental audits (at least monthly audits). The audits are to verify the projects compliance with the EMPr and conditions of the EA.

The ECO must at the request of the Department forward audit reports to the Department at a frequency determined by the Department which must be stipulated in the EA.

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

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

A copy of all ECO monitoring reports, contractor method statements and pro forma documentation (see 1.2.11 & 1.2.12) must be kept on site and be made available to the Department and or the ECO upon request.

1.2.7 Measurement and payment

It is understood that environmental requirements included in this EMPr will entail costs over and above those of the civil requirements. These include provision for: mitigation and enhancement actions; training and environmental awareness requirements; monitoring; auditing; and corrective actions. The proponent must recognise this and make provision for it in the tender. Costing for management action should be done with inputs and advice from appropriate technical members of the project team and relevant EAP who have knowledge of the management actions being recommended as well as practical experience in implementing similar measures and techniques.

Allowance to comply with this EMPr will be made in the Construction Contract.

1.2.8 General guidelines

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

- The prevention of any site degradation due to non-compliance, administrative or financial problems, and inactivity during the construction phase, illegal activities, delays caused by archaeological finds etc. is ultimately the responsibility of the applicant/developer. Section 28 of NEMA.
- The Eskom project manager or co-ordinator shall be responsible for ensuring that the land owners/ Technical Services Officer (TSO)/ Project co-ordinator have been informed before any work is carried out on site. Contractors shall find out if owners/ TSO/ Project co-ordinator the have been informed before moving onto site.
- All workforce members and other construction personnel are not to go beyond the project footprint as shown on site plans. Landowners are not comfortable when strangers come on to their properties. They will look for reasons to interfere with the construction process and may therefore cause delays in the process that can be very costly to the Contractor.
- No fences, gates or locks shall be damaged to obtain access onto a line route. Arrangements shall be made in advance to obtain permission for access.
- Use of private roads shall be arranged in advance. Any damage to private roads shall be repaired at the contractor's expense and to the satisfaction of the landowner. This shall be the responsibility of the project manager or coordinator.
- Gates shall be left as they are found, i.e. closed gates shall be kept closed and open gates shall be left open. Gates to adjacent properties or onto public roads shall be closed at all times. Any Eskom gates installed on the line route shall be kept closed and locked except while stringing is taking place. Open gates shall be guarded to prevent animals straying and unauthorized persons and vehicles entering into adjacent camps or properties.
- The Contractors must adhere to agreed and approved access points and haul roads.
- Permission shall be obtained from landowners before any water is used.
- No camping is allowed on any private property.

- No fires shall be lit on private property. If fires are lit on Eskom's property or in the construction camp, provision shall be made that no accidental fires are started. No firewood shall be collected in the veld.
- If activities that can cause a fire are carried out, fire extinguishers shall be available on site and in the construction camp.
- Vehicles shall be driven at a moderate speed on private roads and stay within the statutory speed limit on public roads.
- All movement of vehicles shall take place on the established Eskom servitude road or on private roads as agreed in advance. Keep to existing tracks. No movement shall take place through the veld. Special care shall be taken to prevent excess damage during wet weather.
- If any vehicle should get stuck, the damage shall be repaired immediately so that no deep ruts remain.
- Any damage to private property shall immediately be reported to Eskom and the owner. The damage shall be rectified immediately if possible and/or appropriate compensation shall be paid to the owner at the discretion of the project manager/coordinator in consultation with the property owner. A written record of damages and rectifying action shall be kept. The landowner's satisfaction with the outcome of rectifying action shall be obtained in writing.
- Relevant landowners and businesses must be informed of the starting date of construction as well as the phases in which the construction shall take place.
- A proper system of waste management shall be instituted in the construction camp. This entails that sufficient waste bins are available on site and in the construction camp. The waste shall be dumped at an approved waste disposal site. No containers, scrap metal, conductor etc. shall be left on site.
- All scrap shall be removed and taken to an appropriate disposal site. No oil, diesel or other chemicals shall be spilled or discarded anywhere. If an accidental spill occurs, it shall be reported immediately and cleaned to the satisfaction of Eskom and the landowner. No waste shall be left in the veld or on the line route.
- Water and Toilet facilities shall be provided on site and in the construction camp. The facilities shall comply with Eskom standards and shall have the approval of the landowner.
- No human excrement shall be left in the veld. If no toilet facilities are available such waste shall be buried *immediately*.
- Herbicides shall only be applied with Eskom's permission and in accordance with the Eskom Policy on Herbicides.
- Camp and office sites shall be dismantled and removed after completion of the construction phase of the project. The site shall be rehabilitated to as close as possible to its original condition to the satisfaction of the landowner that shall be in writing.
- All excavations shall be enclosed to prevent animals or people from accidentally falling into excavations.

- No trees shall be cut or removed without prior permission from the landowner.
- The Contractor must adhere to all conditions of contract including this EMPr.
- Proper planning of the construction process must be undertaken to allow for disruptions due to rain and very wet conditions.
- Where existing private roads to be utilised as access are in a bad state of repair, such roads' condition must be well documented, including photographs, before they are used for construction purposes. If necessary some repairs must be done to prevent damage to equipment and plant.
- All private and public manmade structures near the project site must be protected against damage at all times and any damage must be rectified immediately.
- Proper site management and regular monitoring of site works.
- Proper documentation and record keeping of all complaints and actions taken.
- Regular site inspections and good control over the construction process throughout the construction period.
- A positive attitude towards Environmental Management by all site personnel must be motivated through regular and effective awareness and training sessions (see 1.2.10 below).
- An ESO, on behalf of the Contractor, is to be appointed to implement this EMPr. The ESO and not the Contractor or his/her ESO is to deal with any landowner related matters.
- Environmental Audits to be carried out during and upon completion of construction.

1.2.9 Awareness training

The ESO (member of the Contractor's team) is responsible for ensuring everyone on site is given an environmental awareness induction session which not only clearly defines what the environment is and gives specifics detailing the local environment but outlines the requirements of the EMPr as a management tool to protect the environment. This environmental awareness induction session shall be undertaken prior to construction activities commencing on site. Refresher courses must be conducted as and when required.

Implementation of Environmental Awareness

1.2.10.1 Objectives

The objectives of the Environmental Awareness Plan are as follows:

Competence, training and awareness

1 The organisation shall ensure that any person(s) performing tasks for it or on its behalf that have the potential to cause a significant environmental impact(s) identified by the organisation is (are) competent on the basis of appropriate education, training or experience, and shall retain associated records.

2 The organisation shall identify training needs associated with its environmental aspects and its environmental management system. It shall provide training or take other action to meet these needs, and shall retain associated records.

3 The organisation shall establish, implement and maintain a procedure(s) to make persons working for it or on its behalf aware of:

The importance of conformity with the environmental policy and procedures and with the requirements of the environmental management programme;

The significant environmental aspects and related actual or potential impacts associated with their work, and the environmental benefits of improved personal performance;

Their roles and responsibilities in achieving conformity with the requirements of the environmental management programme, and

The potential consequences of departure from specified procedures.

Eskom is committed to identifying training needs and ensuring that all personnel whose work may create a significant impact upon the environment receive appropriate training.

1.2.10.2 Identification of training needs

An employee's job description will be used to identify the activities that the individual undertakes. Impacts and environmental aspects as described in the EMP are specific to each activity, and will be used in the identification of the environmental risks associated with each job description.

The following training needs will be required: -

- General Environmental Awareness Training;
- Understanding of the Eskom Environmental policy;
- Awareness of environmental legislation;
- Awareness of significant environmental aspects associated with their work activities;
- Awareness of environmentally related operational procedures that need to be followed when conducting work activities; and
- Awareness of the potential consequences of not following environmentally related operational procedures.

1.2.10.3 Training methods

Training methods should be developed to suit the requirements of **Eskom**. Training could take the form of:

- Environmental awareness training as part of the induction training.

- A job specific training program for the operational areas based on the significant environmental aspects and associated impacts as specified in the EMP. Training topics could include: -

  No development zones;

  Waste prevention and control;

  Waste sorting and handling;

  Resource consumption;

  Storing and handling of petroleum hydrocarbons;

  Storing and handling of chemicals;

  Rehabilitation/Housekeeping; and

  Spills prevention/clean up.

- Training on environmental legislation; and
- Training of Management specific to the EMP.

1.2.10.4 Training Record

Training records must be kept of the training undertaken by each individual, as required by ISO14001.

1.2.10 Contractor Environmental Method Statements

Method Statements are written submissions to the Engineer by the Contractor, in collaboration with his/her ESO, in response to a request by the 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 Engineer. The Method Statements contain the appropriate detail such that the Engineer is able to assess whether the Contractor's proposal is in accordance with the requirements of the EMPr. The contractor must sign each Method Statement along with the ECO 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 ECO and Engineer on the understanding that such changes are environmentally acceptable and in line with the requirements of this EMPr.

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

- Solid waste management;
- Cement and concrete batching;

- Construction lay down areas;
- Workshop and maintenance/cleaning of plant;
- Dust control;
- Handling & storage of oils/ chemicals/ hydrocarbons;
- Hydrocarbon and emergency spills procedures;
- Sourcing, excavating, transporting and dumping of fill and spoil material;
- Topsoil management;
- Fire;
- Access routes and haul roads; and
- Rehabilitation of disturbed areas.

1.2.11 Site documentation

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

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

1.2.12 Pro forma documentation

1.2.12.1 Prior to the commencement of construction activities

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

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

1.2.12.2 During construction and operation activities

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

1.2.13 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.

Advertising on Roads and Ribbon Development Act No. 24 of 1940
Regulates the display of adverts at places visible from public roads. Also controls the depositing of machinery or refuse, and the construction or laying of structures, near public roads.
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

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
Fencing Act 31 of 1963
Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act 36 of 1947
Game Theft Act 105 of 1991
HV Regulations

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

National Heritage Resources Act No. 25 of 1999

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 EMPrloyees and the public to dangerous and toxic substances or activities.
Department of Labour

1.2.14 Eskom Distribution standards and procedures:

The following document(s) contain provisions by Eskom that must be adhered to. At the time of publication, the edition indicated was valid. All controlled documents are subject to revision, and parties to agreements most ensure that they are using the most recent edition of the document(s) listed below. Information on currently valid national and international standards and specifications can be obtained from the Information Centre and Eskom Documentation Centre at Megawatt Park.

- ESKADAAO3: *Corporate Directive for the management of Polychlorinated Biphenyls (PCB)*
- ESKADABG8: *Oil spill clean-up and rehabilitation Directive*
- ESKAGAAV5: *Guidelines for the safe handling and disposal of fluorescent tubes and ballasts.*
- ESKASAAC2: *Management of PCB's Standard*
- ESKASAAL0: *Standard for the safe use of Pesticides and Herbicides*
- ESKASABG3: *Standard for Bush Clearance and Maintenance within overhead power line servitudes*
- ESKASABT0: *Oil spill clean up and rehabilitation Standard*
- ESKPBAAA4: *Ozone Depleting Compounds Management and Phase out Policy*
- ESKPBAAD4: *Herbicides Management Policy*
- ESKPBAAD6: *Eskom Environmental Management Policy*
- ESKPBAAP9: *Environmental Land Management Directive*
- ESKPVAAZ1: *Eskom Environmental Management Procedure*
- SCSASAAJ6: *Fire Risk Management*
- SCSPBAAY2: *Distribution Environmental Management Policy*

1.1 PREAMBLE

The point of departure for this EMPr is to ensure a pro-active rather than re-active approach to environmental performance by addressing potential problems before they occur. This will limit corrective measures needed during the construction phase of the project. Therefore the purpose of an EMPr is to provide management measures that must be implemented by Developers, Engineers and Contractors alike to ensure that the potential impacts of a proposed development are minimised. It must also be ensured that the EMPr is maintained and upheld as a dynamic document in order for the project team to add or improve on issues that might be considered left out or not relevant to the project. In such instances the 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 EMPr, 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 EMPr contains specific mitigation requirements and requested contractor method statements stipulated where required.

Many potential environmental impacts will have immediate or long term effects during the ***'operational'*** phase (e.g. impact on avifauna). If the development is monitored on a continual basis during operations, 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 proponent and management team.

It must be noted that the responsible party for the majority of the mitigation measures in the operational phase is that of the proponent / developer (Eskom), unless otherwise stipulated. The names of the responsible parties must be made available to the relevant authorities for record purposes.

The management body must ensure that a maintenance team is employed with the correct

equipment and skill to maintain natural vegetation, buildings, fences etc. The following tables will refer to the responsible party as “Management body: ‘to be announced’ and ‘maintenance crew’”.

1.2 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.

Responsible Party – These columns indicate the party responsible for implementing the actions the mitigation measures.

SPECIALIST RECOMMENDATIONS

The last part of the table provides space for the EAP to add specialist recommendations that need to be addressed (See pages 46).

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

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
A1 Project contract and programme i. The EMPr must be included as part of the tender documentation thereby making it part of the enquiry document to make the recommendations and constraints, as set out in this document, enforceable under the general conditions of contract. ii. A copy of this EMPr must be available on site. The Contractor must ensure that all personnel on site, sub-contractors and their team, suppliers, etc. are familiar with and understand the specifications contained in the EMPr. iii. No work shall commence until permission is granted from the Environmental Advisor from Eskom Distribution Services and the EA is obtained from DEA. The Project Manager shall ensure that all conditions of the EA are fulfilled before the Contractor occupies the site.	• 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	-	Project team
A2 Appointments and duties of project team i. The contact details for the ECO, ER and Contractor must be completed and a copy kept on site. This document must be made available to the approving authority on request. ii. Before construction activities commence, role players must have a clear indication of to their role in the implementation of this EMPr as indicated in 1.2.5 Table 1.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase	• Contract records • Signed declaration pro forma's	-	Project team
A3 Method statements i. As required in 1.2.11, certain method statements must be provided by the contractor. All activities which require method statements may only commence once the method statements have been approved by the engineer and/or ECO as applicable. ii. Where applicable, the contractor will provide job-specific training on an *ad hoc* basis when workers are engaged in activities, which require method statements.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase	• Approved method statements and relevant pro forma documents • Training records	As and when required	Contractor, Engineer

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

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
A4 Site demarcation and development i. The surveys/ site plans for the overall project area and construction footprint as approved in the EA must be complete before the contractors begin construction. ii. "No-go" areas such as sensitive areas identified during the EIA process (i.e. heritage areas and buffer area to Kamfers Dam) must be clearly demarcated (e.g. warning tape) prior to the commencement of construction activities. iii. All relevant 'general' and 'specific' conditions contained in the EA must be included in the space provided below and included as part of this EMPr when the "declaration of understanding" is signed by the Developer, Engineer and Contractor. The proponent is to sign the space provided.	• 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	EAP specialist, Engineer, contractor
A5 Emergencies, non-compliance and communication i. The contractor must provide method statements on the protocols to be followed, and contingencies to be put in place for the following potential incidents before construction may begin: Contamination of natural vegetation and soils from spills; and fire. ii. The contractor understands that failure to adhere to the requirements of the EMPr will result in fines as stipulated in 1.2.8 'Tolerances' and detailed in Annexure 7, 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	Contractor, Engineer

Phase of development	**PRE-CONSTRUCTION**	**EA reference number**	
Impact / issue	**EA CONDITIONS (B)**	**Proponents signature**	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
The Environmental Authorisation conditions are to be included in this section once it is available.	•	•		
	•	•		

Phase of development	CONSTRUCTION
Impact / issue	Materials (C)

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
Handling				
C1 Stockpiles i. All temporarily stockpiled material must be stockpiled in such a way that the spread of materials are minimised. ii. The stockpiles may only be placed within the demarcated areas the location of which must be approved by the ER, or ECO. iii. The contractor must avoid wetland and Thornveld vegetated areas that will not be cleared. iv. Storm water runoff from the stockpile sites and other related areas may not run freely into the immediate and surrounding environments. v. Stockpiles are to be stabilised if signs of erosion are visible. vi. Soils from different horizons must be stock piled such that topsoil stockpiles do not get contaminated by sub-soil material. vii. Topsoil stockpiles must be monitored for invasive exotic vegetation growth. Contractors must remediate as and when required in consultation with the ER and ECO. viii. No plant, workforce or any construction related activities may be allowed onto the topsoil stockpiles. ix. Topsoil stockpiles must be clearly demarcated as no-go areas. x. 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	Contractor

Phase of development	CONSTRUCTION
Impact / issue	Materials (C)

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
C2 Oil and chemicals i. The contractor must provide method statements for the handling & storage of oils and chemicals, fire, and emergency spills procedures. ii. These substances must be confined to specific and secured areas within the contractor's camp, and in a way that does not pose a danger of pollution even during times of high rainfall. These areas must be imperviously bunded with adequate containment (at least 1.5 times the volume of the fuel) for potential spills or leaks. iii. A register shall be kept of all substances and be available for inspection at all times. iv. Drip trays (minimum of 10cm deep) must be placed under all vehicles and machinery/ equipment that stand for more than 24 hours. Vehicles and/or equipment suspected of leaking must not be left unattended, drip trays must be utilised. v. The surface area of the drip trays will be dependent on the vehicle and/or equipment and must be large enough to catch any hydrocarbons that may leak from the vehicle and/or equipment while standing. vi. The depth of the drip tray must be determined considering the total amount / volume of oil in the vehicle and/or equipment. The drip tray must be able to contain the volume of oil in the vehicle and/or equipment. vii. Spill kits must be available on site and in all vehicles. Spill kits must be made up of material/product that is in line with environmental best practice (SUNSORB is a recommended product that is environmentally friendly). viii. All spilled hazardous substances must be contained in impermeable containers for removal to a licensed hazardous waste site, (this includes contaminated soils, and drenched spill kit material). A certificate of disposal shall be obtained by the Contractor and kept on file.	• 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	Contractor

Phase of development	CONSTRUCTION
Impact / issue	Materials (C)

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
C3 Cement i. The contractors must provide and maintain a method statement for cement and concrete batching. The method statement must provide information on proposed storage, washing & disposal of cement, packaging, tools and plant. ii. Cleaning of cement mixing and handling equipment must be done using proper cleaning trays. iii. All empty containers must be stored in a dedicated area and later removed from the site for appropriate disposal at a licensed facility. iv. Any spillage that may occur must be investigated and immediate remedial action must be taken. v. The visible remains of concrete, either solid, or from washings, must be removed and disposed of as waste to a registered landfill site. vi. Cement batching areas must be located in consultation with the ER or ECO to ensure residues are contained and that the proposed location does not fall within drainage lines, storm water channels, or natural vegetation 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	Contractor

Phase of development	CONSTRUCTION
Impact / issue	Materials (C)

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
C4 Dangerous and toxic materials (Provision of storage facilities) i. Materials such as fuel, oil, paint, herbicide and insecticides must be sealed and stored in bermed areas or under lock and key, as appropriate, in well-ventilated areas. ii. All storage areas must be monitored for spills and any spills shall be contained, cleaned and rehabilitated immediately. iii. Any leaking containers must be repaired or removed from site. iv. 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. v. 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. vi. 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. vii. The contractor must supply a method statement for the storage of hazardous materials at tender stage. viii. 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	Contractor

Phase of development	CONSTRUCTION
Impact / issue	Materials (C)

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
C5 Use of dangerous and toxic materials i. Only Eskom approved chemicals must be used in the control of weeds and pests. The application shall be according to set specifications, the manufacturer conditions must not be deviated from. Herbicide may only be applied by a qualified Herbicide Applicator who is in possession of a herbicide Applicators' Licence. The possibility of leaching into the surrounding environment shall be properly investigated and only environmentally friendly herbicides shall be used. ii. A register must be kept of the Herbicides and Pesticides applications. iii. The contractor must keep the necessary materials and equipment on site to deal with spills/ fire of the materials present should they occur. iv. The contractor must set up a procedure for dealing with spills/ fire, which will include notifying the ECO and the relevant authorities (if required) prior to commencing with construction. These procedures must be developed with consultation and approval by the appointed ECO. v. 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	Contractor

Phase of development	CONSTRUCTION
Impact / issue	PLANT (D)

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
D1 Eating areas i. The Contractor must, in conjunction with the ECO, designate restricted eating areas for eating during normal working hours. Adequate closed refuse bins must be provided and cleaned on a regular basis. ii. No fires are permitted. iii. The feeding, or leaving of food, for stray or other animals in the area is strictly prohibited. iv. 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 frequently.	Contractor, ESO
D2 Toilets and ablution facilities i. The contractor is responsible for providing all sanitary arrangements for his and the sub-contractors team. A minimum of one chemical toilet must be provided per 15 persons distributed along the linear construction route and at the substation locations. ii. Sanitary arrangements must be to the satisfaction of the ECO and the local authority. Toilets must be of the chemical type. The contractor must keep the toilets in a clean, neat and hygienic condition. The contractor must supply toilet paper at all toilets at all times. Toilet paper dispensers must be provided in all toilets. iii. Toilets must be easily accessible to ensure they are utilised. Their location must first be approved by the ER or ECO. iv. The contractor (who must use reputable toilet-servicing company) must be responsible for the cleaning, maintenance and servicing of the toilets. All toilets must be cleaned and emptied before the builders' or other public holidays. v. Toilets out on site must be secured to the ground and have a sufficient locking mechanism operational at all times.	• 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	Contractor, ESO

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
D3 Waste management i. The contractors must provide and maintain a method statement for solid waste management. Information on the proposed licensed facility to be utilised and details of proposed record keeping for auditing purposes must be provided. ii. Waste shall be separated into recyclable and non-recyclable waste, and shall be separated as follows: · Hazardous waste: including (but not limited to) old oil, paint, etc, · General waste: including (but not limited to) construction rubble, Reusable construction material. · Recyclable waste shall preferably be deposited in separate bins. iii. Any illegal dumping of waste is not tolerated, this action will result in a fine and if required further legal action will be taken. Proof of legal dumping (waste certificates) must be obtained by the Contractor and kept on file. iv. Waste collection bins at the substation and/or site camp must be provided and clearly marked for ease of management. v. All refuse bins must have a lid secured so that animals cannot gain access. vi. Sufficient closed containers must be strategically located around the construction site camp to handle the amount of litter, wastes, rubbish, debris, and builder's wastes generated on the site. No waste may be left anywhere on site. vii. Under no circumstances may solid waste be burned on site. viii. 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 EMPr. Proof of this undertaking must be issued to the ECO. ix. All solid and chemical wastes that are generated must be removed and disposed of at a licensed waste disposal site. The contractor is to provide proof of such to the EO and ECO. x. Chemical containers and packaging brought onto the site must be removed for disposal at a suitable site. xi. A skip (if required), preferably with a cover, must be used to contain refuse from campsite bins, rubble and other	• 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	Contractor, ESO

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
construction material. Rubble shall be removed from site regularly. A portable bin must be supplied by the contractor that must be transported back to the main crew camp at the end of the day. xii. No waste may be buried along the proposed route alignment.				

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
D4 Dust i. The contractors must provide and maintain a method statement for dust control. The method statement must provide information on the proposed source of water to be utilised and the details of the licenses acquired for such usage. ii. Wherever possible the servitude must not be stripped of all vegetation, but rather cut grass to ground level so as not to expose soil. iii. Potable water must not be used as a means of dust suppression, and alternative measures such as temporary surfacing must be sourced. The use of 'grey' water from the sewage plant must be investigated as an alternative. The contractor will be responsible to source this water and obtain the required approvals to utilise this water for the purpose of dust suppression. iv. Dust production must be controlled by regular watering of the works area, should the need arise. NB: Concrete dust is toxic and damages soil properties. Therefore watering to prevent dust spread must not be done where concrete dust has fallen or it will infiltrate into the soil. Concrete bags must not be allowed to blow around the site and spread cement dust. v. All vehicles transporting material that can be blown off (e.g. soil, rubble etc.) must be covered with a tarpaulin, and speed limits of 20 km/h must be adhered to. The Contractor and ER are to monitor dust generated from vehicles and ensure that this is kept to a minimum. vi. Excessive dust conditions must be reported to the ECO. vii. All forms of dust pollution must be managed in terms of the Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965)	• 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	Contractor, ESO

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
D5 Workshop equipment, maintenance and storage i. No maintenance and washing of vehicles and equipment will take place on site. ii. Leaking equipment must be repaired immediately or be removed from site to facilitate repair. iii. All potentially hazardous and non-degradable waste must be collected and removed to a registered waste site. iv. The construction area must be monitored for oil and fuel spills and such spills must be cleaned and remediated to the satisfaction of the ECO or ER. Cleaning and remediation must be done with products that are in line with best environmental practice i.e. SUNSORB. v. The Contractor must be in possession of an emergency spill kit that is complete and available at all times on site. The Contractor must ensure that senior and other relevant members of the workforce are trained in dealing with spills by using emergency spill kits. 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. • All spills of hazardous substances must be reported to the ER and 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	RE, Contractor, ESO

Phase of development	CONSTRUCTION
Impact / issue	Construction (E)

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
E1 Fires i. Absolutely no burning of waste is permitted. ii. No fires are allowed on site.	• 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	Monitor daily	Contractor, ESO, ESO
E2 Erosion and sedimentation i. 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. ii. All disturbed areas will require rehabilitation must be mulched to encourage vegetation re-growth. Mulch used must be free from alien seed.	• 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	Contractor, ESO, ESO

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
E3 Fauna i. All activities on site must comply with the regulations of the Animal Protection Act, 1962 (Act No. 71 of 1962 ii. All construction workers must be informed that the intentional killing of any animal is not permitted as faunal species are a benefit to society. 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 ECO is not able to. iii. Environmental induction training and awareness must include aspects dealing in safety with wild animals on site. Focus on animals such as snakes and other reptiles that often generate fear by telling workers how to move safely away and to whom to report the sighting. Workers should also be informed where snakes most often hide so that they can be vigilant when lifting stones etc. iv. Interaction of birds with power lines should be prevented by the application combination of catenary lights and bird diverters on the entire length of the line from the railway to the Homestead substation. These bird diverters must be effective at diverting birds during both day- and, especially, night-time, must be able to be fitted in place so that they do not drift along the line and be readily and cost effectively installed on, or removed from, existing lines.	• Minimise disturbance to and loss of animals especially birds • Minimise collusion of birds with lines especially Lesser Flamingo during night-time flights • Minimise interruption of breeding patterns of birds • Minimise destruction of habitat	• No complaints from Nature Conservation, WESSA or “Save the Flamingo” • No litigation concerning applicable animal protection acts • No measurable or visible signs of habitat destruction	Monitor daily	Contractor, ESO, ESO

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
E4 Flora i. The surrounding natural areas especially the sensitive Kamfers dam area, are no-go areas and staff are not to pick or damage plants in any way; these must be demarcated as no-go areas. ii. Trees and natural vegetation or any other natural features inside and outside the work area, which will not be cleared for construction purposes, must be clearly demarcated 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 EA and must be overseen by the ECO. Any feature defaced by the Contractor must be reinstated to the satisfaction of the ECO and penalties/fines may be imposed by the ER. iii. The collection of firewood is strictly prohibited. iv. All alien vegetation creating a fire hazard shall be cleared and treated with herbicides. Eskom approval must be obtained for herbicide use. Department of Water Affairs (DWA) approved methodology can be obtained from Information Centre and Eskom Documentation Centre at Megawatt Park and should be applied. v. 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 by the contractor. vi. Active re-vegetation must take place with locally indigenous vegetation under the supervision of the ECO.	• 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	Contractor, ESO, ESO

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
E5 Heritage i. In terms of the National Heritage Act, 1999 (Act No. 25 of 1999), construction personnel must be alert and must inform the local Council should they come across any findings of heritage resources within 24 hours. ii. Should any archaeological artefacts be exposed during construction activities, work on the area where the artefacts were found must cease immediately and the ECO must be notified within 24 hours. iii. Under no circumstances must archaeological artefacts be removed, destroyed or interfered prior to authorisation by the South African Heritage Resources Agency or Heritage Western Cape.	• 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	Contractor, ESO, ESO
E6 No-go / sensitive areas i. All construction activities must remain within the boundaries of the servitude area and substation site as demarcated at the start of construction. ii. The construction footprint must be kept to a minimum thus reducing the infringement of the activities on surrounding habitats. iii. The surrounding natural areas and private land are no-go areas and construction activities and staff are not to enter these areas. iv. Vehicles are only to access the site via the approved access road. No vehicular movement is permitted outside of the substation designated area.	• 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	Contractor, ESO
E7 Crime, safety and security i . Construction procedures must make provision for earthing requirements ii . No site staff, other than security personnel and skeleton staff shall be housed on site unless otherwise stipulated in the Environmental authorisation. Security personnel and skeleton staff shall be supplied with adequate protective clothing, ablution facilities, water and refuse collection facilities, facilities for cooking and heating so that open fires are not necessary.	• Reduce the risk of potential incidences • Minimise the potential impact on the environment	• No incidences reported	Monitor daily	Contractor, ESO

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
iii . A boundary fence will serve to prevent 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. iv . 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. v . The contractor shall ensure that all emergency procedures are in place prior to commencing work. Emergency procedures shall include (but not be limited to) fire, spills, contamination of the ground, accidents to employees, use of hazardous substances and materials, etc. vi . The contractor shall 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. vii . 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.				
E8 Geotechnical i . All trenches and excavation works must be properly backfilled and compacted according to specifications given in sub-clause 5.2.4. of SABS 1200DA. Founding conditions for individual structures must be confirmed by a qualified Geotechnical Engineer / Structural Engineer / Geologist.	• Minimise potential structural faults • Minimise trench collapse	• No visible signs of backfill deterioration or trench collapse	As and when required	Geotechnical Engineer, Contractor

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
E9 Access route/haul roads i. Planning of any new access routes must be done in conjunction between the contractor, Eskom and the land owner. ii. No unauthorised access is permitted. Any authorised clearing for access roads must be done under the supervision of the ECO. Any damage or degradation will be investigated and fines issued, the affected areas must be immediately rehabilitated. No damage, whether accidental or deliberate, to natural areas should result from vehicles diving through them. iii. Speed limits shall be enforced. iv. All roads shall be repaired to their current state prior to construction, upon completion of the project. v. Existing roads and services must be utilised as far as possible. vi. No driving off from the marked roads is permitted and designated parking areas must be identified and demarcated with applicable signage. vii. 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.	• 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	Contractor or ESO
E10 Buildings, services, fences etc i. Where the cable route crosses inhabited area, the necessary precautions according to the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) shall be incorporated by the Contractor to safeguard the lives & property of inhabitants. ii. No damage or tampering with existing services in the area is permitted. iii. All pipelines shall be clearly marked and protected. Any damage to pipe lines shall be repaired immediately. iv. Power cuts to facilitate construction must be carefully	• Reduce the risk of potential incidences • Minimise the potential impact on the environment	• No incidences reported	Monitor daily	Contractor, ESO, ESO

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
planned. If possible disruptions must be kept to a minimum and should be well advertised and communicated to landowners.				
E11 Visual impact i. Shade cloth must be utilised to conceal and minimise the visual impact of Contractor camps, lay down and storage areas. ii. Rubble and litter must be removed regularly and be disposed of at a registered landfill.	• Minimise visual impact	• No complaints from I & AP's	Monitor daily	Contractor, ESO

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
E12 Crime, safety and security i. No site staff, other than security personnel and skeleton staff will be housed on site unless otherwise stipulated in the EA. Security personnel and skeleton staff must be supplied with adequate protective clothing, ablution facilities, water and refuse collection facilities, facilities for cooking and heating so that open fires are not necessary. ii. 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. iii. 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. iv. 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. v. 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. vi. The nearest emergency service provider must be identified. 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.	• Reduce the risk of potential incidences • Minimise the potential impact on the environment	• No incidences reported	Monitor daily	Contractor, ESO, ESO
E13 Hydrology i. Increased run-off during construction must be managed using berms and other suitable structures as required to ensure flow velocities are reduced; this must be done in consultation with the RE and ECO. Storm water, wherever possible, should be allowed to soak into the land in the area on which the water fell.	• Minimise pollution of soil, surface and ground water resources in the immediate and surrounding environments • Minimise impeding the natural flow of water	• No visible signs of pollution • No signs of siltation of water courses • No visible erosion scaring once construction is	As and when required, monitor daily	Contractor, ESO

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
ii. 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 responsible for all costs incurred by organisations called to assist in pollution control and/or to clean up polluted areas. iii. The contractor must ensure that excessive quantities of sand, silt and silt-laden water do not enter the storm water system or natural areas. Appropriate measures, e.g. erection of silt traps, or drainage retention areas to prevent silt and sand entering drainage or watercourses must be taken. These measures must be reviewed and audited by the ECO. iv. Approval must be obtained from DWA for any activities that require authorisation in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998). v. It must be ensured that all equipment to be used is not the cause of irreparable damage to wet areas. The contractor must, where required, use alterative methods of construction in such areas.	• Minimise the impact on natural water flow dynamics • Minimise scarring of the soil surface and land features • Minimise damage to river and stream embankments • Minimise erosion of embankments and subsequent siltation of rivers and streams • Minimise damage to riverine habitats	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		

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
E14 Soil i. The contractors must provide and maintain a method statement for management of topsoil. ii. Topsoil must be stripped from all areas that are to be disturbed during the construction period and where permanent structures and access is required. These areas will include permanent works, cable route trenches, stockpiles, construction camps and laydown areas. Topsoil must be stripped before excavation commences. iii. Topsoil must be deemed to be the top layer of soil (150mm) containing organic material, nutrients and plant seeds. For this reason it is an extremely valuable resource for the rehabilitation and vegetation of disturbed areas. iv. All topsoil must be removed and stockpiled on the site. Stockpiles must not be higher than 2m to avoid compaction. v. Dust suppression is necessary for stockpiles older than a month – with either water or a biodegradable chemical binding agent. vi. Disturbed surfaces to be rehabilitated must be ripped (depth of 250mm) in two directions at right angles and the area must be rehabilitated with topsoil from the same soil zone.	• 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	Contractor

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
E15 Excavating & backfilling i. The contractors must provide and maintain a method statement for sourcing, excavating, transporting and dumping of fill and spoil material. ii. The material to be utilised for compacted backfill shall be deposited in horizontal layers having a thickness of not more than 300mm before being compacted iii. The topsoil, set aside during the excavation, shall be deposited on top as the final backfill layer. iv. Backfilling must be undertaken in such a way that the final contours blend with the surrounding environment. v. The distribution of materials shall be such that the compacted material will be homogeneous to secure the best practical degree of compaction, impermeability and stability. vi. The material shall be compacted by mechanical compaction machines to a minimum of 90% of the density of the undisturbed material. vii. Surplus material shall be removed from site and suitably disposed of at a registered waste disposal site.	• Miminise settling with voids • Ensure stability of the soil in future	• No visible signs of erosion • Re-vegetation through seeding • Limited visual impact	As and when required	Contractor

Phase of development	CONSTRUCTION	EAP	Strategic Environmental Focus
Impact / issue	SPECIALIST REQUIREMENTS	Proponents signature	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBALE PARTY
F1 Avifauna Impact Assessment i. Eskom approved bird diverters/ flappers are to be installed in the central 10 metres of the line span between the pylons/ poles in the De Beer Section of the powerline route (as per the specialist recommendation). ii. Should the Preferred Route be approved (Green Route) (Annexure 7) – then bird diverters or flappers (effective during the day and night time – i.e. imported (not yet approved by Eskom) versions) must be installed along the entire length of the powerline between pylons/poles for the entire section of the route between the railway line and the Homestead substation. iii. Should Alternative B (Purple Route) (Annexure 7) be approved – then bird diverters/ flappers are only required to be installed along the entire length/ span of the lines between pylons/pole for the entire section from where the route turns in westerly direction (after its northward turn from the residential area) towards the Homestead substation. iv. Flappers/ diverters must be able to be fitted in place so that they do not drift along the line and be readily and cost effectively installed on, or removed from, existing lines.	• Minimise collusion of birds with lines especially Lesser Flamingo during night-time flights	• No complaints from Nature Conservation, WESSA or "Save the Flamingo"	Monitor daily	Eskom, Contractor, ESO, ESO

Phase of development	OPERATIONAL
Impact / issue	General

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBEL PARTY
A1 Storm Water Management i. Excessive quantities of silt laden runoff water must not be allowed to access the Kamfers Dam. In the event that silt runoff occurs off the site, the cause of this must be investigated and suitable mitigation measures employed. This may include the vegetation of bare areas, installing flow diversion channels in consultation with an engineer, installing velocity reducing structures etc. ii. All maintenance activities must be monitored to ensure that no environmental damage occurs. All damage must be mitigated immediately.	• Minimise the potential loss of topsoil	• No evidence of erosion along the route	As and when required Monitor seasonally	Proponent (Eskom)
A2 Servitude Maintenance i. Fertiliser / pesticides / weedkillers The fertilizer / pesticides / weedkillers brought onto site must be stored in the manufacturer's container in a safe place out of reach of the public and that can preferably be locked, before use. The label and instructions on the chemicals must be read and followed at all times. Empty containers must be disposed of responsibly and depending on the hazardous rating (indicated on the label) may have to be taken to a registered hazardous waste disposal site. ii. Clearing of vegetation All alien invasive plant species and clippings must be removed for disposal at a registered organic waste transfer facility. Regular checks must be made that sufficient bird diverters and catenary lights are still in place to prevent bird collusions and if not must be replaced on a regular basis.	• Minimise chances of transgression of the acts	• No litigation due to transgression of relevant acts • No complaints from surrounding residents and businesses	As and when required Monitor seasonally	Proponent (Eskom)

Phase of development	**OPERATIONAL**	**Lead Authority**	
Impact / issue	**EA Conditions**	**Proponents signature**	

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
	•	•		
	•	•		

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	FREQUENCY OF ACTION	NOTES
	•	•		
	•	•		

ANNEXURE 1

DECLARATION OF UNDERSTANDING BY THE DEVELOPER

I, _____

Representing _____

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

Contract _____

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

Signed: _____

Place: _____

Date: _____

Witness 1: _____

Witness2: _____

ANNEXURE 2

DECLARATION OF UNDERSTANDING BY THE ENGINEER

I, _____

Representing _____

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

Contract _____

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

Signed: _____

Place: _____

Date: _____

Witness 1: _____

Witness2: _____

ANNEXURE 3

DECLARATION OF UNDERSTANDING BY THE CONTRACTOR

I, _____

Representing _____

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

Contract _____

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

Signed: _____

Place: _____

Date: _____

Witness 1: _____

Witness2: _____

ANNEXURE 4 A

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:

Construction Lay Down Areas

CONTRACT:…… **DATE**:……..

WHAT 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 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:

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 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

Construction Lay Down Areas (contd.)

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.)

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.)

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

Dust Control (contd.)

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

_____ _____
(Signed) (Print name)

Dated:._____

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

_____ _____
(Signed) (Print name)

Dated:._____

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

_____ _____
(Signed) (Print name)

Dated: _____

ANNEXURE 4 F

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.)

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

Diesel Tanks and Re-fuelling Procedure (contd.)

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
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(Signed) (Print name)

Dated:._____

2) CONTRACTOR
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_____ _____
(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.)

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
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(Signed) (Print name)

Dated:._____

2) CONTRACTOR
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_____ _____
(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.)

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
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_____ _____
(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.)

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 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 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 Disturbed Areas (contd.)

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

_____ _____
(Signed) (Print name)

Dated:._____

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

_____ _____
(Signed) (Print name)

Dated:._____

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

_____ _____
(Signed) (Print name)

Dated: _____

ANNEXURE 5

INCIDENT AND ENVIRONMENTAL LOG

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

ANNEXURE 6

COST ESTIMATES FOR IMPLEMENTING THE MITIGATION MEASURES AND OPERATIONAL MAINTENANCE THEREOF (EXAMPLE)

Environmental Cost Estimates during construction phase

Construction phase Cost Estimates				
Categories and activities	**Explanations**	**Examples**	**Operational costs**	**Capital costs**
Drainage	Costs associated with the construction of, modifications too, repair and maintenance of all sewerage drainage systems			
Fire protection –	Costs associated with the modifications of, repair and maintenance too all transformer bund walls			
	Costs associated with modifications of, repair and maintenance too all substation oil dams			
Water treatment	Costs associated with the, repair and maintenance of all substation water pipes and associated water infrastructure			
Rehabilitation	All costs associated with the rehabilitation of disturbed land			
Internal Man-hours	Environmental Cost Centres for dedicated full time Environmental Personnel. This includes man-hours and other costs incurred that are charged to the cost centre by non dedicated environmental personnel	Costs associated with actual time spent on managing, documenting, monitoring, reviewing and mitigating environmentally related impacts (air, water, waste, land) Environmental costs associated with capital projects are capitalised (i.e. charged to one of the categories under capital expenditure) and hence are not to be included as part of the costs assigned to the environmental cost centre. Only the supply amount must be used at all times to remove the risk for double accounting.		
Categories and activities	**Explanations**	**Examples**	**Operational**	**Capital**

			costs	**costs**
Audits • Internal audits. • External audits	All costs associated with environmental audits			
Training **(internal and external)**	Costs associated with environmental training, for courses attended internally and externally, including environmental related interventions for non-environmental practitioners who are required to incorporate environmental considerations in the performance of their duties.	Costs associated with environmental training, only for EDCO registered courses attended internally and externally by non environmental practitioners who are required to incorporate environmental considerations in the performance of their duties. EDCO registered environmental related courses, which support the Transmission Group's business goals and Key Performance Areas. Other ad hoc courses, seminars and conferences, which are not registered on the EDCO system, will not be reported on.		
Waste management Costs associated with the management of domestic and hazardous waste as per the waste directive.	Costs associated with the repair and maintenance of all sewerage pipes. Costs associated with all sewerage removal contracts.			
	PCB: • Costs associated with the removal, storage and disposal of all hazardous waste • Costs associated with the incineration of PCB's			
	Costs associated with the removal of domestic waste at Transmission business units and substations.			
	Costs associated with the replacement and removal of asbestos slabs.			
Categories and activities	**Explanations**	**Examples**	**Operational costs**	**Capital costs**

Land management Biodiversity and land management. Costs related to managing and maintaining servitudes and land including erosion control, firebreaks, alien plant eradication and animal interactions. All costs related to grass cutting shall not be included.	Costs associated with all erosion contracts initiated for the sole purpose of rectifying damage too the environment.			
	Rehabilitation: Costs associated with the rehabilitation of disturbed land during construction.			
	Aesthetics: Costs associated with modifications for aesthetic reasons.			
	Costs associated with the eradication of Alien / invader vegetation.			
	Projects initiated in the supply plan and fulfilling the criteria of environmental expenditure as per the definitions.			
Pollution	All costs associated with the clean up and mitigation of oil, herbicide or hazardous substance spills.			
Production equipment	All assets purchased for the primary reason of sustaining, improving, rectifying damage too or protecting the environment from real or perceived impact.			
Other	Other environmental costs costed for the sole purpose of sustaining, improving, rectifying damage too or protecting the environment from real or perceived impact.			
TOTALS				

Environmental Cost Estimates during operational phase

Operational Phase Cost Estimates				
Categories and activities	**Explanations**	**Examples**	**Operational costs**	**Capital costs**
Environmental costs associated with the Transmission network	Environmental impact quantification costs associated with the compilation of BA's, EMP's, risk assessments and the compilation, implementation of EMP's, and EMP's for new or existing projects **EXCLUDING** internal man-hours. This would include costs associated with contractors employed to undertake EIA's and EMP's.	Environmental impact quantification costs associated with the compilation of scoping documents, EIA and EMP reports. Costs associated with EIA, EMP reports and substation modifications due to environmental reasons.		
Drainage	Costs associated with the construction of, modifications too, repair and maintenance of all sewerage drainage systems			
Fire protection –	Costs associated with the modifications of, repair and maintenance too all transformer bund walls			
Bird Diverters and catenary lights	Costs associated with modifications of, repair, replacement and maintenance too all bird diverters and catenary lights			
Water treatment	Costs associated with the, repair and maintenance of all substation water pipes and associated water infrastructure			
Rehabilitation	All costs associated with the rehabilitation of disturbed land			
Internal Man-hours	Environmental Cost Centres for dedicated full time Environmental Personnel. This includes man-hours and other costs incurred that are charged to the cost centre by non dedicated environmental personnel	Costs associated with actual time spent on managing, documenting, monitoring, reviewing and mitigating environmentally related impacts (air, water, waste, land) Environmental costs associated with capital projects are capitalised (i.e. charged to one of the categories under capital expenditure) and hence are not to be included as part of the costs assigned to		

		the environmental cost centre. Only the supply amount must be used at all times to remove the risk for double accounting.		
Categories and activities	**Explanations**	**Examples**	**Operational costs**	**Capital costs**
Audits • Internal audits. • External audits	All costs associated with environmental audits			
Training **(internal and external)**	Costs associated with environmental training, for courses attended internally and externally, including environmental related interventions for non-environmental practitioners who are required to incorporate environmental considerations in the performance of their duties.	Costs associated with environmental training, only for EDCO registered courses attended internally and externally by non environmental practitioners who are required to incorporate environmental considerations in the performance of their duties. EDCO registered environmental related courses, which support the Transmission Group's business goals and Key Performance Areas. Other ad hoc courses, seminars and conferences, which are not registered on the EDCO system, will not be reported on.	**R16,876**	
Waste management Costs associated with the management of domestic and hazardous waste as per the waste directive.	Costs associated with the repair and maintenance of all sewerage pipes. Costs associated with all sewerage removal contracts			
	PCB: • Costs associated with the removal, storage and disposal of all hazardous waste • Costs associated with the incineration of PCB's			
	Costs associated with the removal of domestic waste at Transmission business units and substations.			

Categories and activities	Explanations	Examples	Operational costs	Capital costs
Land management Biodiversity and land management. Costs related to managing and maintaining land including erosion control, firebreaks, alien plant eradication and animal interactions. All costs related to grass cutting shall not be included.	Costs associated with all erosion contracts initiated for the sole purpose of rectifying damage too the environment.			
	Rehabilitation: Costs associated with the rehabilitation of disturbed land during construction.			
	Aesthetics: Costs associated with modifications for aesthetic reasons.			
	Costs associated with the eradication of Alien / invader vegetation.			
	Projects initiated in the supply plan and fulfilling the criteria of environmental expenditure as per the definitions			
Pollution	All costs associated with the clean up and mitigation of oil, herbicide or hazardous substance spills.			
Production equipment	All assets purchased for the primary reason of sustaining, improving, rectifying damage too or protecting the environment from real or perceived impact			
Other	Other environmental costs costed for the sole purpose of sustaining, improving, rectifying damage too or protecting the environment from real or perceived impact			
TOTALS				

PREFERRED ROUTE AND ALTERNATIVE ROUTES