Established in 1952

Eskom Holdings SOC Limited

PROPOSED ESKOM OUTENIQUA-OUDTSHOORN 132 KV POWERLINE INSTALLATION, OUDTSHOORN, EDEN DISTRICT MUNICIPALITY, WESTERN CAPE

Final Environmental Management Programme

DEA REF: 14/12/16/3/3/1/613
DEA&DP: 16/3/1/6/6/D7/9/0089/12

Issue Date: **11 July 2013**
Revision No: **1**
Project No: **11032**

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Date:	11 July 2013
Document title:	**FINAL EMP: PROPOSED ESKOM OUTENIQUA-OUDTSHOORN 132 KV POWERLINE INSTALLATION, OUDTSHOORN, EDEN DISTRICT MUNICIPALITY, WESTERN CAPE**
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PREFACE

The Applicant, Eskom Holdings (SOC) Ltd. is applying for Environmental Authorisation for the construction of a new 132kV double circuit Kingbird Powerline from the existing Outeniqua Substation to the existing Oudtshoorn Substation to provide sufficient capacity for the future demands and improve reliability. The proposed new 132kV Powerline will be approximately 27km in length. The preferred route alternative (Route A) will follow a north-easterly direction in the servitude of the existing 400kV Powerline from the existing Outeniqua Substation to the existing Dysseldorp Substation for the first 8.8km of the route and then turn north towards Oudtshoorn. The alternative route (Route B) will follow a northerly route directly to Outdshoorn.

The development requires compliance with the National Environmental Management Act (NEMA), Act No. 107 of 1998(as amended) and Environmental Impact Assessment (EIA) Regulations 2010. This Application for Environmental Authorisation is being made to the Competent Authority, namely, the National Department of Environmental Affairs (DEA).

This Environmental Management Programme (EMP) is required to be submitted with the Final Basic Assessment Report for final comment to I&APs.

The development and implementation of environmental specifications is an on-going process that is iterative in nature.

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LIST OF APPENDICES

GLOSSARY

Contaminated water:
Means any water contamination by the Contractor's activities, e.g. concrete water and run-off from plant / personnel wash areas.

Contractor:
Persons/organisations contracted by the Applicant to carry out parts of the work for the planned upgrade. The Contractor shall ensure compliance with this EMP, and shall request advice from the Environmental Control Officer where considered appropriate.

Construction Activities:
Activities associated with physical disturbance to the land, including the storage machinery, equipment and materials.

Construction Phase:
The Construction Phase is the period of commencement of physical disturbance to the land, excluding rehabilitation activities, such as re-vegetation and replacing of topsoil.

Construction Zone:
The demarcated and pegged area where construction activities shall be permitted.

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

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

Developer:
The Developer is the Applicant – Eskom Holdings SOC Ltd.

Environment:
The surroundings within which humans live and that consist of :
(i) the land, water an atmosphere of the earth;
(ii) micro-organisms, plant and animal life
(iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Environmental Audit:
A systematic, documented verification process of objectively obtaining and evaluating evidence to determine whether specified environmental activities, events, conditions, management systems, or information about these matters conform with audit criteria, and communicating the results of this process to the client.

Groundwater:
All subsurface water that fills voids between highly permeable ground strata comprised of sand, gravel, broken rocks, porous rocks, etc. and move under the influence of gravitation.

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.

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

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

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

Interested and Affected Parties (I&AP's):
Those individuals or organisations that have an interest in the proposed development or will be directly affected by the activities of the development, as identified in the environmental impact assessment process.

Local Authority: Oudtshoorn and George Municipalities (Eden District)

Method statement:
Written statements that contain details about construction procedures required for work near sensitive environments in the site, including environmentally sensitive activities such as waste management, storage of hazardous substances, dust control, erosion and sediment control, etc.

A work method statement is predominately used in construction to describe a document that gives specific instructions on how to safely perform a work related task, or operate a piece of plant or equipment.

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.

Pollutant:
A contaminant at a concentration high enough to endanger the environment or the public health.

Pollution:

- *National Water Act, 36 of 1998*: "Water pollution means the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it –
  (a) less fit for any beneficial purpose for which it may reasonably be expected to be used; or
  (b) harmful or potentially harmful –
  (aa) to the welfare, health or safety of human beings;
  (bb) to any aquatic or non-aquatic organisms;
  (cc) to the resource quality; or
  (dd) to property".

- *National Environmental Management Act, No. 107 of 1998*:- "pollution means any change in the environment caused by –
  (i) substances;
  (ii) radioactive or other waves; or
  (iii) noise, odours, dust or heat
  emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future."

Rehabilitation:
Rehabilitation is defined as the return of a disturbed area to a state which approximates the state (wherever possible) which it was before disruption.

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

ABBREVIATIONS

C	Contractor
DEA	Department of Environmental Affairs
ECO	Environmental Control Officer
EMP	Environmental Management Programme
EIA	Environmental Impact Assessment
HWC	Heritage Western Cape
I&AP's	Interested and Affected Parties
OHSA	Occupational Health and Safety Act, Act 85 of 1993
PC	Project Coordinator

1 INTRODUCTION

The Applicant, Eskom Holdings (SOC) Ltd. is applying for Environmental Authorisation for the construction of a new 132kV double circuit Kingbird Powerline from the existing Outeniqua Substation to the existing Oudtshoorn Substation to provide sufficient capacity for the future demands and improve reliability. The proposed new 132kV Powerline will be approximately 27km in length. The preferred route alternative (Route A) will follow a north-easterly direction in the servitude of the existing 400kV Powerline from the existing Outeniqua Substation to the existing Dysseldorp Substation for the first 8.8km of the route and then turn north towards Oudtshoorn. The alternative route (Route B) will follow a northerly route directly to Outdshoorn.

SiVEST Environmental (Pty) Ltd was appointed as the Independent Environmental Assessment Practitioner to undertake the necessary Basic Assessment (BA) process to ensure environmental compliance.

The compilation of this EMP forms part of the requirements of the EIA Regulations 2010 and compliance with the contents of this report is required during the construction and operational phases. This Environmental Management Programme (EMP) serves as an environmental management tool by providing a *generic structured plan* of mitigatory measures, which serves as a guide to assist in minimising the potential environmental impact of the activity that may arise during the construction and operational phases.

This EMP provides a set of guidelines for the environmental management of all works to be executed by the Engineer and Contractor, so as to have a minimum impact on the environment in accordance with all relevant legislation, policies and standards.

In this context it should be should be viewed as a dynamic or 'living' document, which may require updating, or revision during the life-cycle of the upgrade to address new circumstances as the need arises. It is essentially a written plan of how the environment is to be managed in practical and achievable terms.

The effectiveness of the EMP is limited by the level of adherence to the conditions set forth in this report by the Developer and the Contractor. It is further assumed that compliance with the EMP will be monitored on a regular basis as set out in the EMP and contractual clauses.

All revisions implemented since the Draft EMP are highlighted in light grey for ease of reference.

2 AIM AND OBJECTIVES OF THE EMP

The aim of the EMP is to:

- Identify those construction activities identified for the proposed upgrade that may have a negative impact on the environment;
- Outline the mitigation measures that will need to be taken and the steps necessary for their implementation; and
- Describe the reporting system to be undertaken during construction.

The objectives of the EMP are to:

- Identify a range of mitigation measures which could reduce and mitigate the potential adverse impacts to minimal or insignificant levels.
- Provide a pro-active and practical working mechanism to enable the measurement and monitoring of environmental performance on site.
- Ensure that the environmental specifications are identified, effective and contractually binding to enable compliance on site.

3 COMPLIANCE WITH APPLICABLE LAWS

The supreme law of the land is "The Constitution of the Republic of South Africa", which states: *"Every person shall have the right to an environment which is not detrimental to his or her health or well-being".*

Laws applicable to protection of the environment in terms of Environmental Management (and relating to construction activities) include but are not restricted to:

- National Environmental Management Act, No. 107 of 1998
- National Environmental Management: Air Quality Act (AQA), No. 39 of 2004
- National Environmental Management: Biodiversity Act, No. 10 of 2004
- National Environmental Management: Waste Act (WA), No. 59 of 2008
- National Heritage Resources Act, No. 25 of 1999
- National Water Act, No 36 of 1998 and amendments
- National Veld and Forest Fire Act, No 101 of 1998
- National Road Traffic Act, No 93 of 1996
- Occupational Health and Safety Act, No 85 of 1993
- Soil Conservation Act, Act No 76 of 1969
- Sub-division of Agricultural Land Act Repeal Act 64 of 1998 (re: soil conservation)
- and all regulations framed there under and amendments there to.

Of particular importance is Section 28 (1) of the National Environmental Management Act (NEMA – Act 107 of 1998) which places an obligation on all individuals to take due care of the environment and to ensure remedial action is instituted to minimise and mitigate environmental impact.

The EMP forms part of the Contract Documentation and is thus a legally binding document. This EMP as well as the Environmental Authorization (EA) is to be kept on site where the construction activities will occur, at all times. In terms of this Act an individual responsible for environmental damage must pay costs both to environment and human health and the preventative measures to reduce or prevent additional pollution and/or environmental damage from occurring. This is referred to as the Polluter Pays Principle.

Should an amendment to this EMP be required, an application is to be lodged with the competent authority (DEA). Amendments may only be implemented once the amended EMP has been approved by the competent authority.

4 ADMINISTRATION AND REGULATION OF EMP

4.1 Implementation and Compliance with the EMP

The Developer is responsible for the implementation of the EMP and for compliance monitoring of the EMP. The EMP will be made binding on all Contractors operating on the site and will be included with the Contract. Non-Compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.

Refer to Appendix 3 for a Proforma for an Environmental Contract Agreement to be signed between the Developer and Contractor.

4.2 Conditions of Contract / Roles and Responsibilities

The Contractor shall be responsible for ensuring compliance with the provisions contained in the EMP, and shall be held accountable in terms of the EMP.

4.2.1 Authority (DEA)

The National Department of Environmental Affairs (DEA) is the designated authority responsible for authorising this EMP. DEA has overall responsibility for ensuring that the Applicant complies with the conditions of Environmental Authorisation and the EMP.

DEA shall also be responsible for approving any amendments to the EMP (if required). DEA may also perform random site inspections to check compliance with the EMP.

4.2.2 Developer (Eskom Holdings SOC Ltd.)

The Applicant is the Developer and has overall responsibility for compliance with the EMP as it is a fundamental component of the authorisation requirements for the project.

This means that the Developer must:

- Ensure that the professional team and the Contractors are appropriately briefed and that their appointment includes environmental requirements as relevant.
- Ensure that he/she is kept fully informed of the performance of the project against the requirements of the EMP.
- Ensure that appropriate action is taken where consistent incidents of non-compliance are taking place.
- Ensure that any corrective action required by the authorities is implemented.

4.2.3 Project Coordinator (PC)

The primary responsibility of the Project Co-ordinator (PC) is to ensure that the Contractor complies with the environmental specifications in this document. In addition the PC shall:

- Assume overall responsibility for the effective implementation and administration of the EMP;
- Ensure that the EMP is included in the Contractors' contract (Including all subcontractors);
- Ensure that the EMP and any other relevant documentation are provided to the applicable Construction Supervisor and the contractor (if utilized);
- Undertake regular inspections of the Contractor's site (in conjunction with the Clerk of Works, where relevant) as well as the Powerline servitude works in order to check for compliance with the EMP in terms of the specifications outlined in this document;
- Keep a register of major incidents (spills, injuries, complaints, legal transgressions, etc.) and any other relevant issues related to the EMP;
- Report any problems (or complaints) concerning the environment arising out of the construction phase to the appointed Environmental Practitioner;
- To ensure Contractor staff are trained in accordance with the EMP;
- To implement recommendations of possible audits;
- Inform Environmental Practitioner of the date of construction at least 2 months in advance.

4.2.4 Eskom construction team or external construction contractor and all subcontractors (C)

Hence forth referred to as the 'contractor' in this document. The construction team/ contractor/ subcontractor shall:

- Ensure that the environmental specifications of this document are effectively implemented. This includes the on-site implementation of steps to mitigate environmental impacts;
- Monitor environmental performance and conformance with the specifications contained in this document during site inspections;
- Discuss implementation of and compliance with this document with staff at routine site meetings;
- Report non-compliances to EMP and Environmental Authorisation to PC and Environmental Practitioner immediately (on discovery), within 24 hours of the event discovered or occurred;
- Report progress towards implementation of and non-conformances with this document at site meetings with the PC;
- Ensure that suitable records are kept and appropriate documentation is available to the PC; and
- Ensure that construction employees are trained in accordance with the requirements of the EMP.

The Contractor will conduct all activities in a manner that minimises disturbances to and impacts on the environment.

The Contractor is deemed <u>not</u> to have complied with this EMP if:

- There is evidence of contravention of clauses within the boundaries of the property and adjacent areas during the Construction Phase;
- If environmental damage ensues due to negligence;
- The Contractor fails to comply with corrective or other instructions issued by the Local Authority, PC, ECO, or the Developer within a specified time; and
- Failure to take any reasonable measure to protect the environment if there is a perceived or identified environmental risk associated with an activity that has not been defined in the EMP;
- The Contractor fails to respond adequately to complaints from the public.

Application of a penalty clause will apply for incidents of non-compliance as per the Schedule of Fines[1] at Appendix 5. Such fines will be paid by the Contractor to the Developer and will be used in rehabilitation and/ or landscaping.

4.2.5 Environmental Control Officer (ECO)

The Environmental Control Officer's (ECO) duties shall include, *inter alia*, the following:

- Ensuring the necessary environmental authorisations and permits, if any, has been obtained;
- Advising the Contractor and/or the ER on environmental issues within defined construction areas;
- Undertaking site visits once-per-month to ensure compliance with the EMP. Should construction occur in sensitive areas (within 32m of a watercourse, sensitive vegetation) the frequency of site inspection should be increased to bi-weekly visits;
- Completing environmental checklists during site visits and keeping a photographic record of progress on site from an environmental perspective;
- Reporting back on any environmental issues/incidents to the DEA as reported to by the Contractor;
- Providing the DEA is informed of work progress on site;
- Preparing an environmental audit report at the conclusion of the construction phase.

4.3 ON-SITE EMP TRAINING AND AWARENESS

The purpose of the environmental training is to communicate potential environmental impacts relating to construction activities to contractors to ensure that precautionary measures are undertaken to avoid and/or mitigate the impacts. Environmental awareness training sessions should be undertaken prior to any work commencing by any contractor or sub-contractor on site as well as throughout the construction phase. The environmental practitioner/ ECO shall give initial EMP training prior to any work starting on site. The training record must be kept on the project file for each training.

4.3.1 EMP training and awareness before commencement of construction

- Eskom Holdings SOC Ltd. will provide a General Environmental Awareness Workshop for all employees of the Contractor, sub-contractor, and suppliers. The initial training workshop will be held prior to any work commencing on route. The Contractors shall ensure that all construction personnel, including senior route staff, sub-contractors and suppliers etc., attend the environmental awareness-training workshop prior to commencing any work i.e. camp establishment, clearing and installations. The Contractor shall allow one hour for this initial workshop. Additional staff, sub-contractors and suppliers coming on to the route must attend an environmental awareness workshop prior to the commencing their duties. Subsequent workshops will be arranged at a mutually agreed time and venue.
- The main contractor must provide the ECO with (a) a list of all sub-contractors and their scope of work for the contract and (b) a time schedule of works before the initial environmental training awareness session is scheduled. This will assist the ECO to schedule subsequent EMP awareness training sessions as and when required.
- No construction work may take place on route unless under the supervision of a person who has attended an Environmental Awareness Workshop.

[1] Based on City of Cape Town: Standard Environmental Specifications – Version 5 (03/2002)

- The PC shall inform the environmental practitioner two months prior to starting construction, so that training can be given.

4.3.2 EMP awareness training throughout the construction phase

- EMP awareness training must be given to new contractors and sub-contractors that start to work on site throughout the construction phase at various stages.
- All contractor and sub-contractor teams involved in work on site must be briefed on their obligations towards environmental controls and methodologies in terms of this EMP prior to commencement of any construction and construction related activities on an on-going basis throughout the construction phase.
- In the case of new workers coming on site throughout the construction programme, the site contractor is responsible to ensure all new labour arriving on site is made aware of the contents of the EMP and is briefed on the Environmental Awareness Training session.
- A register must be kept of all training given to contractors and sub-contractors, indicating the date, time, venue, attendees, name of trainer, name of contractor, signatures and unique numbers / identity numbers of attendees.
- If the construction is phased, a training session must be conducted before the commencement of each phase. The environmental issues, construction impacts and mitigation measures for each phase must be discussed in detail at this training session.

4.4 ON-SITE COMMUNICATION PROCEDURE

4.4.1 On site start-up/ kick-off meeting

- The mandatory on-site start-up meeting that is conducted preferably 14 days but not less than 5 working days prior to commencement of any site/camp establishment, earthworks and/or construction activities and will relate to additional discussed information that must be complied with during the entire construction phase.
- All site-specific issues and arrangements as discussed and agreed on at site start-up meeting.
- Information pertaining to specific site construction agreements that was discussed at the kick-off meeting on site by all the relevant parties and agreed on and must be recorded and included as part of the EMP.
- Any changes made to the EMP as per the agreements between all parties on site must still fall within the conditions of the Environmental Authorisation.
- At the site start-up meeting, the following issues must be discussed:
  - The Construction EMP & other relevant site documents
  - Project to be discussed and all uncertainties are cleared
  - Method statement/s to be discussed
  - Access routes
  - Road and construction area to be demarcated
  - Materials stockpile and lay down areas to be demarcated
  - Method of stockpiling to be discussed
  - Fire-fighting procedures
  - Mandatory firefighting equipment & fire preventative measures
  - Mandatory site equipment and facilities
  - Solid waste facilities and removal intentions
  - Placement, type and service of toilets to be agreed on
  - Placement and type of rubbish bins and removal of rubbish to be agreed on
  - Environmental Education and awareness training session to all contractors & onsite staff/labour.
  - Location & establishment of concrete batching plant facility.
  - Frequency of site audits (at least one (1) site visit per month)

4.4.2 Monthly construction progress meetings

- Environmental matters pertaining to the construction of the project must be included as an agenda item on the monthly project construction progress meeting.
- The ECO must be invited to monthly construction progress meetings to discuss findings of site audits, mitigation measures and other issues arising pertaining to the implementation of the EMP conditions.

4.4.3 Minutes of meetings

- Environmental issues, action items, complaints, incidents and mitigation measures must be recorded in minutes of monthly construction project meetings.
- The ECO must be included in the circulation of minutes of meetings in order to stay informed of construction progress and construction issues as they relate to the receiving environment.

4.5 Method Statements

The Contractor shall submit written Method Statements to the PC and ECO for all environmentally sensitive activities, as per the Method Statement (Proforma attached at Appendix 2). A Method Statement Control Sheet must be attached to each Method Statement, and shall be signed by the Contractor (Proforma attached at Appendix 3.)

Method statements are required for the following aspects of works:

- MS 1: Location and establishment of Construction camp
- MS 2: Storage of construction material and hazardous substances
- MS 3: Wastewater management
- MS 4: Flora management and vegetation clearance
- MS 5: Solid waste management
- MS 6: Removal and stockpiling of topsoil and other excavated material
- MS 7: Archaeological resource management
- MS 8: Dust control
- MS 9: Traffic control
- MS10: Freshwater Ecosystem Management
- MS11: Demarcation of sensitive areas
- MS12: Site Clearing
- MS13: Soil Erosion and Sediment Control

5 PRE-CONSTRUCTION (SITE ESTABLISHMENT) PHASE

Pre-Construction EMP activities are those relating to the preparation of the site prior to the start of the Construction Phase.

The contractor is responsible for the implementation of the activities within this phase.

- Prior to any commencement of construction, an ECO must be appointed.
- The ECO with PC and all construction contractors must inspect all pylon positions along the route and substation site and conduct final permit & license checks (with Eskom environmental practitioner). This must take place at least two months prior to construction commencement to leave enough time for consultation with Departments if needed
- From the outset of construction, the working area must be well defined with an appropriate method. Final site demarcation must be carried out with all relevant parties who will be responsible for the day-to-day activities on the site.
- All rivers and wetland areas must be considered no-go areas (refer to Section 6.12 in this EMP); no vehicles shall be allowed to drive through rivers, streams and wetlands.
- Areas of paleontological and archaeological significance shall be considered as no-go areas (refer to Section 6.11 in this EMP).
- Areas of botanical significance shall be considered as no-go areas (refer to Section 6.5 in this EMP).
- A route walk with the Contractor, ECO, RE and a qualified Botanical specialist shall be undertaken to identify any botanically sensitive areas and identify any plant species which require trans-location.
- The site will be demarcated with appropriate strong steel dropper poles. A single strand of orange baler twine is to be attached to the dropper poles to indicate boundaries and no-go areas for site personnel and vehicular movement (alternative fencing may be decided upon dependent on site requirements).
- The construction area i.e. road, stockpile areas and development footprint etc. must be demarcated and fenced off with steel dropper poles and orange baler twine approximately 1m high is considered adequate. The demarcation will be agreed on during the start-up meeting.
- Work areas and access routes must be clearly demarcated to minimise environmental impact.
- In the event that sensitive features are threatened by construction activities, temporary fencing off of these areas (for individual areas such as trees or rocks) or the construction area (when working in a mainly natural environment) is recommended.
- Areas of special importance will be decided upon between the Engineer, Contractor and the ECO and demarcated as “no-go” areas on a site plan and fenced off. Such areas are out of bounds to the Contractor and his staff, sub-contractors and their staff or suppliers and their staff and to any other person involved in the construction, without the written permission specified by the ECO.

6 CONSTRUCTION PHASE

6.1 Construction Site

- The location for the establishment of a construction site for the storage of materials, site office, containers, ablution facilities etc., shall be identified by the Contractor.
- The construction camp shall not be located in an area of environmental sensitivity).
- No camp shall be established within 32 metres of any watercourse (wetland, river, drainage channels or flood plains) or in an area with sensitive archaeological or botanical resources (refer to Sections 6.5, 6.11 and 6.12 in this EMP).
- The construction camp shall be demarcated by a fence and the suitable signage shall be placed on the entrance and perimeter fence.
- Areas outside the construction site shall be considered “no-go” areas.
- The construction camp shall be kept neat and tidy at all times. Materials and equipment must be kept in designated areas and storing/stockpiling shall be kept orderly.
- The Contractor shall submit a Method Statement indicating the location, preparation and layout of the construction camp.

MS 1: Location and establishment of construction site

6.2 Access to the Site

- As far as possible any access routes/haul roads must utilise existing roads or tracks. Any new access roads/haul roads must be designed so as to minimise erosion and must run across slopes and not directly up-hill.
- Existing gates and entrance walls should not be removed or damaged unless negotiated with the landowner.
- Should damage to access gates and access routes exist before Eskom commence construction on a particular property photographic evidence should be taken of the disturbed area;
- Should the entrance gates be too small for access, they can only be removed with the permission of the property owner.
- Permission must be sought from all property owners before private property is accessed or site preparation commences.
- Property owners access to their property must remain clear at all times.
- Ensure that access to the Powerline route are along negotiated routes as required by landowners;
- Access roads damaged by Eskom vehicles must be rehabilitated to the landowners' satisfaction within an agreed period from date of identification.
- Unused materials must be removed from site at the end of construction.
- On gravel or earth roads on site, the vehicles of the Contractor and his suppliers must not exceed a speed of 25 km/h. On public roads adjacent to the Site vehicles will adhere to municipal and provincial traffic regulations.
- Should an additional access route be required, the access must be agreed upon with the relevant property owner in conjunction with the contractor. A written agreement must be in place, prior to any construction of the said access route.
- Should the entrance gates be too small for access, they can only be removed with the permission of the property owner.
- Once the construction is completed all gates that were removed must be replaced unless requested to stay by the landowner.
- All temporary access routes must be rehabilitated at the end of the contract to the satisfaction of the ECO.
- Method Statements for any new access/ haul roads must be submitted.

MS 9: Traffic Control

6.3 Storage of General Materials & Hazardous Substances

- The contractor shall ensure that all materials to be moved between locations are properly secured and/or covered up during transport.
- The contractor shall ensure that the pick-up and/or drop-off of materials are handled in a safe and environmentally acceptable manner as prescribed in this EMP.
- The contractor shall ensure that the suppliers are aware of the conditions of this EMP when moving materials to/from the construction site.
- Storage of any materials shall not take place within 32m of any watercourses or sensitive environments.
- The total amount of fuel stored temporarily on site may not exceed 30m^3 at any given time.
- Fuel, oil and any other hazardous substances and harmful materials shall be stored in suitable containers within adequately bunded areas (with 110% of the capacity of the volume of the container) in a dry, secure environment, with concrete or sealed flooring.
- Material Safety Data Sheets shall be kept for all hazardous materials and substances and a copy of the Material Safety Data sheets shall be made available to all workers to ensure that the required safe handling and necessary precautions are taken when suing the materials.
- The PC will ensure that materials storage facilities are cleaned/maintained on a regular basis, and that leaking containers are disposed of in a manner that allows no spillage onto the bare soil or surface water.
- The management of such storage facilities and means of securing them shall be agreed to by the Contractor with the PC.

MS 2: Storage of construction materials and hazardous substances

6.4 Leaks and Spills

- All accidental leaks or spills are to be reported to the PC and ECO immediately for any substance, including hydrocarbons and hazardous substances.
- The Contractor shall ensure that an adequate amount of absorbent material is present on-site to absorb any hydrocarbon products, with the material able to absorb the entire volume of hydrocarbons on site.
- Re-fuelling of vehicles shall be done in a designated area within the construction camp.
- Drip trays shall be used at all times when re-fuelling vehicles on-site or for any motor-driven equipment (e.g. generators, pumps etc.).
- Refuelling or maintenance involving the use of hydrocarbons shall not occur within 32m of a watercourse.
- If accidental spillage of hydrocarbons occurs, the area shall be demarcated and isolated before clean-up commences.
- Any contaminated soil shall be excavated and disposed of at a licensed landfill site.
- The Contractor shall ensure that any run-off from re-fuelling area(s), stockpiles or hazardous materials site is contained. No run-off shall enter the ground or watercourses.

6.5 Concrete and cement preparation

- Concrete and cement preparation activities shall not be permitted in any sensitive environments and no mixing shall be allowed on bare soil / permeable ground surfaces.
- Concrete and cement shall preferable be ordered from the supplier, otherwise only sufficient quantities shall be mixed at any one time.
- Mixing activities must take place on an impermeable surface and the mixing area should be bunded to contain any liquids to prevent contamination of soil and stormwater.
- All washing of concrete-contaminated equipment shall take place on impermeable surface(s) with appropriate wastewater containment measures.
- The Contractor shall be responsible to implement collection facilities for cement/ concrete water and matter.
- Used cement bags shall be collected and stored in containers to prevent wind-blown cement dust and water contamination.

MS 3: Wastewater management

6.6 Demarcation of Development Footprint (Construction Zone) and Sensitive Areas

- The construction zone is the section of powerline corridor that will be under construction to complete the activities of the outstanding work.
- The activities required to complete outstanding work shall occur in work spaces agreed to by the RE and ECO before start of construction and shall be limited to the immediate development footprint.
- Environmentally sensitive areas or other significant features shall be marked, and if feasible fenced off, and demarcated as “no-go” areas (refer to Sections 6.5, 6.11 and 6.12 in this EMP). The ECO may identify “no-go” areas at any time during the duration of construction activities.
- Construction vehicles turning requirements shall be restricted to the existing road footprint.
- Areas of construction shall be clearly marked and areas outside the marking avoided.
- Areas that require clearing shall be cleared in a phased approach as construction commences
- The Contractor must maintain in good order all demarcation, fencing and barriers for the duration of construction activities, or as otherwise instructed.
- Any temporary fencing removed for the execution of any portion of the works is to be reinstated by the Contractor as soon as practicable.
- The Contractor at the end of the contract must remove all demarcation, fencing or barriers not forming part of the final works on Site.
- The contractor must ensure that no person, machinery, equipment enter the “no-go” areas at any time during the contract period.
- All staff, vehicles, equipment and construction material are to be restricted to the working areas.
- Vehicles, if parked on site, must have a clearly demarcated area. Accommodation must be made for oil leaks that may occur from the vehicle sumps. This can be achieved by providing a sump tray for each

vehicle or sand that is later removed. The contaminated sand will have to be disposed of at a licensed hazardous disposal site.

MS 11: Demarcation of Sensitive Areas

MS 12: Site Clearing

6.7 Flora Management

The Contractor is referred to the conditions and mitigation measures of the botanical specialist study undertaken by Dave McDonald (Bergwind Botanical Surveys) (October 2012) as attached in Appendix D of the Final BAR:

- All remnant vegetation must not be mowed but rather protected through selective control of invasive alien plants.
- Rehabilitation must be implemented following any construction or disturbance of natural vegetation in any vegetation that is not transformed or degraded already.
- During the construction phase an Environmental Control Office (ECO) **must ensure** that site accessibility and overall **footprint is confined to an absolute minimum** - in terms of the working area needed to construct the towers in addition to the manner in which vegetation is cleared.
- The most important mitigation measure would be to avoid causing disturbance wherever possible. In other words vegetation that does not require removal either for placement of monopoles or for access tracks should not be disturbed.
- Wherever possible existing tracks and roads should be used. They should be properly managed i.e. they should have water-bars where necessary to curb runoff and prevent erosion.
- If new tracks are required these should be carefully planned in conjunction with the respective landowners to ensure that they are properly constructed and can also serve the needs of the local farmers.
- Rehabilitation of areas that are disturbed during construction and would not be required for future maintenance should be carried out.
- After construction, weedy species such as *Galenia africana* (kraalbos) should be monitored in disturbed places and where necessary selectively removed to promote diverse re-vegetation rather than dominance of one or a few species.
- Extreme care must be taken to ensure that no fires are started by construction crews that can spread into areas of flammable vegetation such as Blossoms Asbos Gwarrieveld.
- Any disturbance of vegetation outside the proposed construction area must be rehabilitated to its original state.
- Route specific mitigation measures to be followed are detailed below:

Large concentration of Aloe ferox on Preferred Alternative Route A between Bend Points 18 and 19 needs to be avoided or transplanted. Heuweltijes should also be avoided as pylon construction sites.		
Bend Point	**Latitude**	**Longitude**
18	33° 39' 57.1"	22° 20' 40.5"
19	33° 41' 17.9"	22° 22' 54.0"

MS 4: Flora management and Vegetation Clearance

6.8 Ornithological

- Suitable marking devices (Bird Flight Diverters or Bird-flappers) should be fitted to all identified problem areas on each of the selected routes.
- Bird flappers to be erected with expert guidance to identify the exact locations of the marked areas.
- Once erected, the line should be periodically surveyed for signs of avian collisions for at least a year. Any further problem areas identified in this way should be retrofitted with bird-flappers to alleviate such problems.

6.9 Maintenance of the Construction Site and Waste Management

- The Contractor shall ensure that all litter is collected daily from the work area. Similarly, all bins shall be emptied daily and the waste disposed of at a permitted landfill site.
- The Contractor shall ensure that the construction site, working and eating areas are maintained in a clean, hygienic and orderly state.
- Separate bins should be provided for various materials to facilitate recycling. The bins should have liner bags for easy control and safe disposal of waste.
- The excavation and use of rubbish pits on site is forbidden.
- The burning of waste is forbidden.
- All vehicles and equipment must be maintained in a good condition in order to minimise the risk of leakage and possible contamination of the soil or stormwater by fuels, oils and hydraulic fluids. Sufficient quantities of suitable hydrocarbon absorption or remediation materials must be present on site at all times.

MS 5: Solid waste management

6.10 Staff management, Ablution & Eating Facilities

- Workers are to make use of the chemical toilet to be provided. Under no circumstances may neighbouring open areas or the surrounding bush be used as a toilet facility. At least one (1) chemical toilet must be made available for every 15 workers on site.
- No food may be left outside unattended and no foodstuff is to be left at the camp overnight. No food may be disposed of in the surrounding areas.
- Washing facilities for construction teams shall be provided with flow reduction devices and adequate catchment to contain wash water. Only biodegradable soap shall be allowed (as provided by the Contractor).
- Water from wash basins shall be re-used wherever possible.
- No toilet shall be located in sensitive environments (i.e. in or near watercourses).
- The Contractor in association with the PC shall monitor the performance of workers to ensure compliance with good environmental practices and general conduct as per their environmental awareness induction training.
- The construction site shall stay clean and orderly at all times.
- Site staff shall not be permitted to use the sea for the purposes of bathing, washing of clothing or for any other construction or related activities.

6.11 Worker facilities

- No temporary overnight facilities shall be provided for construction workers on site.
- The Contractor shall be responsible for ensuring access to clean drinking water for all construction workers.

6.12 Excavations and earthworks (general)

- Care shall be taken to preserve all vegetation in the immediate area of these temporary stockpiles.
- Stockpiles should ideally be located to create the least visual impact and must be maintained to avoid erosion of the material and contamination of surrounding environment.
- Stockpile areas shall be re-instated to its original state after the removal of material.
- Excavated material shall be reused and temporarily stockpiled in areas approved by the engineer within the road reserve, shall be subject to the same condition as other stockpiled materials.
- Top soil shall be removed separately and stockpiled separately from other soil base layers.
- Any topsoil removed during the planting process must be backfilled or levelled on site; and ensure that the topsoil is replaced on the surface and not below the ground.
- Topsoil storage areas must be convex and should not exceed 2m in height.
- The Contractor must ensure that the material does not blow or wash away.
- Topsoil must be treated with care, must not be buried or in any other way be rendered unsuitable for further use (e.g. by mixing with spoil) and precautions must be taken to prevent unnecessary handling and compaction.
- In particular, topsoil must not be subject to compaction greater than 1 500 kg/m² and must not be pushed by a bulldozer for more than 50 m. Trucks may not be driven over the stockpiles.

- Topsoil from different soil types must be stockpiled separately and replaced in the same areas from which they were taken if this proves to be the case.
- Specific attention should be given to the areas that may house rare and threatened species.
- Topsoil areas must be demarcated in order to ensure the safekeeping of topsoil and to separate different stockpile types.

MS 6: Removal and stockpiling of top soil and other excavated material

6.13 Paleontological and Archaeological

The Contractor is referred to the conditions and mitigation measures of the heritage specialist study undertaken by Jason Orton (25 October 2012) as per Appendix D in the Final BAR:

- It should be ensured that no structures or ruins, including the ruin at point 041, will be impacted by the development.

LABEL	LATITUDE	LONGITUDE	DESCRIPTION	GRADE	MITIGATION
Point 041	S33°38'22.9"	E22°17'26.1"	Small ruined structure, age and function undiscerned	ungraded	avoid

- Unmarked pre-colonial burials are more likely to be found on river floodplains than in the shale hills and cobbled areas and the ECO should be aware of this possibility. If any human remains are uncovered at any point during development then work in the immediate vicinity should be halted and the find reported to Heritage Western Cape or an archaeologist. The remains would need to be exhumed at the cost of the developer under a permit issued to an archaeologist.
- The ECO shall inform the South African Heritage Resource Agency (SAHRA) and arrange for a palaeontologist/ archaeologist to inspect, and if necessary excavate, the material, subject to acquiring the requisite approval from the SAHRA; and
- Should any findings be made, the Contractor shall not recommence working in that area until he has received written permission from the ECO.
- In the event that previously unknown archaeological features are exposed during the construction phase, the Contractor should inform the Engineer and the ECO who will advise Applicant on the necessary course of action.
- Note that the Contractor may not, without a permit issued by the responsible heritage resource authority; destroy, damage, excavate, alter, deface or otherwise disturb any archaeological site or archaeological material. The latter is a criminal offence under the Heritage Resources Act.

MS 7: Archaeological resource management

6.14 Water courses & Freshwater Ecosystem Management

The Contractor is referred to the conditions and mitigation measures of the freshwater specialist study undertaken by Toni Belcher (25 October 2012) as attached in the BAR:

- Vehicular movement should be restricted to a single access roadway only and no movement within the wet areas.
- Minimise duration and extent of construction activities in the river – construction should also preferably take place in the low flow season.
- Clearing of debris, sediment and hard rubble associated with the construction activities should be undertaken post construction to ensure that flow within the drainage channels are not impeded or diverted.
- Rehabilitate disturbed stream bed and banks and re-vegetate with suitable indigenous vegetation.
- Neither the monopoles nor the anchors should be constructed within the proposed buffer zones of 15m and 30m on either side of the rivers.
- The existing road infrastructure should be utilized as far as possible to minimize the overall disturbance created by the proposed project. For new access roads to the pole structures, these should not be routed along the drainage/stream beds.
- The servitude roads and two track roads that are already in place along the existing power lines on the preferred route must be used during the construction phase and no new roads must be established along this component during or after the construction of the new additional power line.

- Where access routes need to be constructed through ephemeral streams, disturbance of the channel should be limited.
- Wetland areas should be avoided and any road adjacent to a wetland feature should also remain outside of the 30m buffer zone as far as possible.
- All crossings over drainage channels or stream beds should be such that the flow within the drainage channel is not impeded.
- Road infrastructure and cable alignments should coincide as much as possible to minimize the impact.
- Any disturbed areas should be rehabilitated to ensure that these areas do not become subject to erosion or invasive alien plant growth.
- The construction teams should be prohibited from unnecessary destruction of wetland vegetation or fishing;
- Earthmoving equipment and vehicles should be serviced and inspected regularly to allow for the timeous identification of any fluid leaks. Hydrocarbon contamination of the watercourse habitat is rated as a high impact.
- No construction or structures to be placed within a water course.
- No dumping of any excess building material or other wastes or litter should be allowed within any water course areas.
- No littering, waste disposal or other pollution of watercourses.
- Subsistence hunting or harvesting of fauna or flora within the watercourse areas and buffer zones should be prohibited.
- No fishing or bathing in watercourses; and
- No driving in the watercourses.
- Route specific mitigation measures to be followed are detailed below:

PREFERRED ALTERNATIV E ROUTE A		
RIVER	MITIGATION MEASURES	COORDINATES
Doring River	The flood zone adjacent to the river are sometimes wide and flat but also significantly disturbed by farming activities. A 30 m buffer from top of bank on both sides of the river is recommended.	33°43'54.77"S , 22°22'1.30"E to 33°43'53.19"S , 22°22'1.82"E
Doring River Tributaries	None of the ephemeral tributaries and drainage channels appears to have any ecological importance or sensitivity, and most of the surrounding land is seriously disturbed by farming activities. Therefore as a mitigation measure a buffer area of 15m from top of bank should be maintained on both sides of each tributary.	Unnamed tributary 1: 33°45'49.29"S , 22°21'21.12"E to 33°45'48.72"S , 22°21'20.72"E Unnamed tributary 2: 33°45'14.05"S , 22°21'32.60"E to 33°45'12.30"S , 22°21'33.26"E Unnamed tributary 3: 33°42'40.33"S , 22°22'28.04"E to 33°42'39.47"S , 22°22'28.31"E Unnamed tributary 4: 33°42'22.62"S , 22°22'35.17"E Unnamed tributary 5: 33°40'7.44"S , 22°20'57.56"E Unnamed tributary 6: 33°39'33.42"S , 22°19'26.54"E
Kammanassie River	A 30 m buffer from top of bank on both sides of the river is recommended with poles being placed on already severely degraded adjacent farming land. It	Kammanassie crossing: 33°37'35.50"S, 22°15'28.34"E to 33°37'29.76"S , 22°15'25.93"E

	is also proposed that the existing road crossing be used for the purpose of a service road.	
Kammanassie Tributaries	A buffer area of 30 m should be maintained on both sides of each tributary, and pole placing should take place on already disturbed farm land in order to ensure lowest impact on streams and riparian zones. It is also advised that the existing road running alongside the line as well as farm roads inward towards the line be used as service road and that no new service/construction roads cross these tributaries	Unnamed tributary 6: 33°39'33.42"S , 22°19'26.54"E Unnamed tributary 7: 33°38'11.51"S, 22°16'28.11"E to 33°38'10.40"S , 22°16'22.58"E Unnamed tributary 8: 33°38'7.45"S , 22°16'7.75"E to 33°38'6.21"S , 22°16'1.59"E Unnamed tributary 9: 33°38'3.50"S , 22°15'48.10"E Unnamed tributary 10: 33°37'54.13"S , 22°15'36.21"E
Wetland Areas/Farm Dams	Care should be taken that the service/construction roads are of such nature that they do not further increase erosion in this area as erosion and sediment control are of concern here. This farm dam is an earth filled man-made balancing dam for water taken from the Doring River. Poles should be placed 15 m away from each of these dams.	Farm dam 5: 33°39'28.35"S , 22°19'10.09"E tot 33°39'25.04"S , 22°19'8.52"E Farm dam 6: 33°39'20.61"S , 22°19'3.22"E tot 33°39'19.42"S , 22°19'0.49"E
PREFERRED ALTERNATIV E ROUTE A		
RIVER	MITIGATION MEASURES	COORDINATES
Doring Tributaries	A 15 m buffer from top of bank should be allowed for on both sides of each tributary.	Unnamed tributary A: 33°45'1.46"S , 22°20'37.44"E Unnamed tributary B: 33°44'48.17"S , 22°20'25.06"E Unnamed tributary C: 33°44'4.57"S , 22°19'44.93"E Unnamed tributary D: 33°43'27.25"S , 22°19'10.56"E Unnamed tributary E: 33°42'58.97"S , 22°18'44.43"E Unnamed tributary F1: 33°42'47.01"S , 22°18'33.13"E Unnamed tributary F2: 33°42'42.83"S , 22°18'29.34"E Unnamed tributary G crossing 1: 33°41'13.88"S , 22°17'45.24"E

		Unnamed tributary G crossing 2: 33°41'2.46"S , 22°17'51.38"E Unnamed tributary G crossing 3: 33°40'45.41"S , 22°18'3.76"E Unnamed tributary H: 33°40'30.90"S , 22°17'42.32"E Unnamed tributary I: 33°40'14.58"S , 22°17'29.49"E

MS 10: Freshwater Ecosystem Management

6.15 Stormwater Management

- Stormwater inflow shall be diverted from operations to reduce the risk of contamination.
- Any "wet" activities during construction shall be contained to limit stormwater contamination.
- Sand bags or other suitable containment structures shall be provided at the point of stormwater exit from the construction zone to reduce the flow and to trap sediment.
- Contaminated water by silt, cement or any other construction materials shall be diverted into a temporary settlement pond or suitable containers to settle out materials before the water can be decanted into the ground and/or watercourse. The settled material shall be disposed of in a environmentally acceptable manner.

MS 13: Erosion and sediment control

6.16 Soil erosion

- All vehicles to remain within the designated vehicle tracks.
- Existing access tracks must be utilised insofar possible; and
- Minimum / no movement in areas already eroded.
- Erosion control should form part of the on-going construction site management.
- During excavations, sedimentation from excavated material or from erosion shall be kept to a minimum by installing suitable barriers at water exit points.
- After excavation, the affected area shall be stabilized accordingly to prevent any erosion or sediment runoff. Stabilized areas shall be demarcated accordingly.

MS 13: Erosion and sediment control

6.17 Visual

- All vehicles to remain within the designated vehicle tracks.
- Limit height of infrastructure according to standards but reduce where feasible.
- Where possible use materials that visually blend with the surrounds e.g. brown paint.
- Clearly demarcate construction areas to minimize disturbance.
- Re-vegetate disturbed areas (e.g. around base of power lines) as part of the construction phase.
- Dust suppression measures to be put in place (e.g. dustex, watering materials, speed limits).
- Temporary site camp to make use of existing farmstead/area in agreement with farmers.
- No high mast, spot light or up-lighting security lighting allowed.
- Sufficient lighting may be used that staff can access and operate on the site safely.
- Down-lighting to be used.

6.18 Dust Control

- Generation of dust shall be minimised and dust nuisance for the surrounding agricultural and residential areas shall be kept to a minimum wherever possible.

- Dust from exposed soil surfaces shall be minimised at all times, only using water spray during very windy conditions and if water is available at areas adjacent to residents' dwellings.
- Reasonable measures must be undertaken by the Contractor to ensure that any exposed areas and material stockpiles are adequately protected against the wind. Dust screens of a suitable height should be erected wherever required and possible.
- All exposed surfaces should be minimised in terms of duration of exposure to wind and stormwater.

MS 8: Dust control

6.19 Noise

- The Contractor shall adhere to the local by-laws and regulations regarding the noise and associated hours of operations.
- The Contractor shall limit noise levels (e.g. install and maintain silencers on machinery). The provisions of SANS 1200A Subclause 4.1 regarding "built-up" area shall apply to all areas within audible distance of residents whether in urban, peri-urban or rural areas.
- Construction and demolition activities generating output of 85dB or more, shall be limited to normal working hours and not allowed during weekends to limit the impact of noise of neighbours. Should the Contractor need to work outside normal working hours, the surrounding neighbours shall be informed prior to the work taking place.
- No amplified music shall be allowed on site.

6.20 Water Conservation Management

- The minimisation of loss or waste of water, and the efficient and effective use of water shall be maintained on site at all times.
- All hoses shall be fitted with trigger-gun spray nozzles to limit water wastage.
- Dry sweeping shall be undertaken in preference to washing of areas and equipment wherever possible.
- Vehicles may not be washed on site.
- The Contractor shall be responsible for ensuring that there is access to clean drinking water for all employees on site. If water is stored on site, drinking water and multi-purpose water storage facilities shall be clearly distinguished and demarcated.

6.21 Conservation of Natural Resources

- Single directional traffic shall be controlled through a stop-go system or any other appropriate traffic control method.
- Unnecessary access to areas outside the construction perimeter is prohibited.
- Access to adjacent watercourses (for any purposes i.e. swimming, water collection, bathing or washing) is strictly prohibited.
- Construction activities shall not permanently alter the surface or sub-surface flow of water through any aquatic ecosystem.
- Natural features shall not be defaced, painted, marked or damaged in any way, unless it is for construction activity purposes and cleared with the PC and ECO beforehand.
- Vegetation associated with wetlands, pans and dunes shall not be disturbed or removed.
- No hunting, fishing, trapping, shooting, or poisoning of wildlife shall occur. Feeding or disturbance of wildlife is strictly prohibited.
- No construction materials shall be deposited in any wetland/pan or sensitive environment.
- No flora, fauna or avifauna shall be removed or damaged.
- Natural vegetation clearing shall be kept to a minimum. Removal or damage of flora without prior consent of the PC or ECO is strictly prohibited.
- Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. Particular attention must be paid to imported material.
- Removal of any vegetation which is considered an endangered species or protected species listen in Schedules 3 and 4 in terms of the Western Cape Conservation Laws Amendment Act (No. 3 of 2000) may not be removed without a relevant permit obtained from CapeNature.

6.22 Traffic Control

- The Contractor must control the movement of all vehicles (construction and private) including that of his suppliers so that they remain on designated routes.
- Temporary road signs must be erected during the construction phase if required.
- Single directional traffic shall be controlled through a stop-go system or any other appropriate traffic control method.
- During all stages of the construction, the Contractor shall be responsible to for ensuring that suitable access in maintained for public traffic to all relevant businesses and properties.
- The final position of the temporary signs and the proposed traffic accommodation plan must be approved by the Engineer.
- All traffic accommodation measures are to conform to the latest edition of the South African Road Signs Manual.

MS 9: Traffic accommodation

6.23 Safety and emergency procedures, risk management and training

- The application of all Occupational Health and Safety Regulations must be ensured. This includes the distribution and use of protective clothing and equipment to at least include safety shoes, overalls, gloves, dust masks, and where appropriate ear muffs and eye/face protection shields.
- Hand-out and use of safety and protective equipment must be recorded. Staff who fails to use the protective equipment provided by site staff must not be allowed to work at the facility.
- Emergency procedures for fire, adverse conditions due to inclement weather, spillages, stoppage of operations due to refusal to work by employees, etc. must be included in the emergency procedures.
- All relevant fire fighting equipment should be kept on site.
- All staff working on site shall be trained in all relevant aspects of the Occupational Health and Safety Act No. 86 of 1993 and relevant regulations promulgated under this act.
- The Site Manager shall be assigned as the Safety Coordinator for the facility and the Site Manager shall assign a person as deputy to act when appropriate.

The following requirements would be the minimum for the safety program:

- Orientation of new employees including safety training and emergency contingency planning.
- Accident reporting procedures for notification to the Employer and after appropriate agencies.
- Thorough investigation and documentation of all accidents to ascertain the cause and future methods of preventing recurrence.
- Mandatory first aid instruction for designated staff members.
- Regularly scheduled safety meetings.
- Fire prevention and fire fighting instruction.
- Routine inspection and testing procedure for all safety and emergency equipment and protective devices, and routine walk through inspections conducted by the Operator through all areas to identify and correct potential unsafe conditions.
- Posting of safety bulletins and posters required by regulatory agencies and other materials concerning accident prevention and hazardous conditions.
- The Contractor shall abide by all local, provincial and national safety requirements.
- The Contractor shall provide for a first aid station and emergency medical response for injured staff.

6.24 Failure of equipment

- All plant/equipment failure must be repaired or replaced by the Contractor without any undue delay or adverse effect to the operation of the site.
- This includes all mechanical equipment and tools, safety and warning systems.
- The Operator will ensure that all equipment is maintained in a safe operating condition.

6.25 Accident and incident control and reporting

- All accidents must be recorded irrespective of the severity or seriousness of injuries and damage. Data about the accident must be provided within 24 hours after occurrence, or by end of shift to construction supervisor, Eskom safety officer or via a flash report to the Eskom Safety &Risk Department.

- Appropriate recording documents must be available on site and a person must be designated as the Health and Safety Officer.
- Appropriate authorities and law enforcement officers must be included in investigations into accidents.
- Steps to avoid recurrence of similar accidents must be identified and implemented. The steps must be recorded and monitored.
- Incidents must be recorded in an incident register noting the time, date and place where the incident occurred, who and what was involved, and a detailed description of the incident must be included in the report. Refer to the Proforma attached at Appendix 4.
- Actions taken to address the occurrence of the incident, as well as the avoidance of recurrence of the incident must be recorded.

6.26 Public information management and community relations

- The right of the public to information shall be respected in accordance with relevant legislation.
- No person requesting reasonable information will be sent away without supply of the information. This will be limited to site operating conditions and procedures.
- General disturbance should be kept to a minimum. The Contractor shall be responsible for responding to third party or public queries and/or complaints relating to operations.
- The Contractor shall be responsible for maintaining a Complaints Register to record complaints received and action taken. This register shall be made available to the DEA if requested.

7 POST CONSTRUCTION PHASE (OPERATIONAL PHASE)

This relates to the activities that occur once construction is completed and the construction camp is dismantled and the site rehabilitated. It is important that a meeting be held on site between the Applicant, PC and the Contractor to approve all the remediation measures and to ensure that the site has been restored to a condition that is approved by the ER.

7.1 Maintenance of access roads and Powerlines

- Use existing access roads/tracks during maintenance periods.
- Existing gates and entrance walls should not be removed or damaged unless negotiated with the landowner.
- Should the entrance gates be too small for access, they can only be removed with the permission of the property owner.
- Permission must be sought from all property owners before private property is accessed.
- Property owners access to their property must remain clear at all times.
- Ensure that access to the Powerline route are along negotiated routes as required by landowners;
- Access roads damaged by Eskom vehicles must be rehabilitated to the landowners' satisfaction within an agreed period from date of identification.
- On gravel or earth roads on Site, the vehicles of the Contractor and his suppliers must not exceed a speed of 25 km/h. On public roads adjacent to the Site vehicles will adhere to municipal and provincial traffic regulations.
- As far as possible any access routes/haul roads must utilise existing roads or tracks. Any new access roads/haul roads must be designed so as to minimise erosion and must run across slopes and not directly up-hill.
- Should an additional access route be required, the access must be agreed upon with the relevant property owner in conjunction with the contractor. A written agreement must be in place, prior to any construction of the said access route.
- Woody Alien invasive vegetation within the servitude area of the Powerline should be removed on a recommended annual basis or based on the Eskom vegetation management schedule or once safety clearance encroachment is observed.

7.2 Construction Site

- All structures comprising the construction site are to be removed from the site and the area restored to its original condition, to the approval of the relevant landowner.
- The area should be inspected for spills such as from vehicles, if any are found need to be disposed of accordingly and rehabilitated as necessary.

7.3 Land Rehabilitation

- All unwanted soil from the construction phase is to be removed from the site.
- The site is to be free of litter and surfaces are to be checked for waste products.

7.4 Materials and Infrastructure

- All remaining building materials and equipment shall be removed from the site by the Contractor once construction is complete.

7.5 Vegetation Management

- After construction, weedy species such as *Galenia africana* (kraalbos) should be monitored in disturbed places and where necessary selectively removed to promote diverse re-vegetation rather than dominance of one or a few species.
- Extreme care must be taken to ensure that no fires are started by construction crews that can spread into areas of flammable vegetation such as Blossoms Asbos Gwarrieveld.
- Any disturbance of vegetation outside the proposed construction area must be rehabilitated to its original state.

7.6 Freshwater Management

- All crossings over drainage channels or stream beds after the construction phase should be rehabilitated such that the flow within the drainage channel is not impeded.
- Maintenance of power lines should only take place via the designated access routes and multiple crossings over streams and rivers should not be established.
- Maintenance of infrastructure related to the project should only take place via the designated access routes. Disturbed areas along the access routes should be monitored to ensure that these areas do not become subject to erosion or invasive alien plant growth.
- Any disturbed areas should be rehabilitated to ensure that these areas do not become subject to erosion or invasive alien plant growth.

8 AMENDMENTS TO THE EMP

Any major issues not covered in the EMP as submitted shall be addressed as an addendum to the EMP, submitted for approval by DEA prior to implementation.

METHOD STATEMENT

Proposed 132kV Outeniqua-Oudtshoorn Powerline Installation, Western Cape

CONTRACT NO. : _____

This method statement is to be completed by the Contractor (in consultation with the Principal Agent and ECO) at least 5 working days prior to the proposed commencement date of the said work and represents a binding agreement to the method statement by all site contractors and sub-contractors involved in the work for which the method statement is submitted.

METHOD STATEMENT NO. :
PROPOSED WORKS:
DATE OF SUBMISSION:
CONTRACTOR:
DATE OF REQUIRED RESPONSE FROM RE: **DATE OF REQUIRED WORK TO COMMENCE:**

Work to be undertaken:

_____

_____

_____

_____

Works Location (to provide map/geographical reference):

_____

_____

_____

SUPERVISOR/FOREMAN: **CONTACT DETAILS:**

NUMBER OF PERSONNEL ON SITE:
VEHICLES AND MACHINERY TO BE USED:

Remarks: _____

_____

_____

State potential environmental impacts (refer to EMP) and proposed mitigation measures:

_____

Toilet facilities: _____

Litter: _____

Security: _____

Plant/machinery (operation, servicing, management, storage, refueling, etc.).

_____

_____

Emergencies and fire: _____

_____

Hazardous materials (handling, management, storage):

_____

_____

Have all personnel involved been through an environmental induction course:

_____

Petrochemical spill remediation and containment measures:

_____

_____

Other:

_____

DECLARATION BY PARTIES

Contractor:
I understand the contents of the method statement and the scope of the works required of me. I further understand that the method statement may be amended on application to the above signatories and that the Environmental Control Officer will audit my compliance with the contents of this method statement.

_____ _____
Print Name *Date*

_____
Signed

Environmental Control Officer (ECO):
The work described in this method statement, if carried out according to the methodology described, is satisfactory mitigation to prevent avoidable environmental harm.

_____ _____
Print Name *Date*

_____
Signed

Project Coordinator (PC):
The work described in this method statement, if carried out according to the methodology described, is satisfactory mitigation to prevent avoidable environmental harm.

_____ _____
Print Name *Date*

_____
Signed

METHOD STATEMENT CONTROL SHEET:
Proposed 132kV Outeniqua-Oudtshoorn Powerline Installation, Western Cape

Method Statement No. : _____

ACTIVITY TO BE UNDERTAKEN:
SUBMITTED BY:
DATE OF RESPONSE REQUIRED FROM PC:
SCHEDULED DATE OF WORK COMMENCEMENT:
NAME OF PC: **DATE OF SUBMISSION TO PC:**

REVIEW SCHEDULE		
Date	**Authority**	**Comments**

DISTRIBUTION AND AUTHORISATION			
	PC	**ECO**	**CONTRACTOR**
Name			
Signature			
Date			

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PROGRAMME (EMP) FOR:

Proposed 132kV Outeniqua-Oudtshoorn Powerline Installation, Western Cape

CONTRACT NO: _____

MADE AND ENTERED BETWEEN:

The Developer: **ESKOM SOC (LTD)**,

represented by _____,

in his/her capacity as _____ ,

is herewith authorized to enter this agreement with:

The Contractor: _____,

represented by _____,

in his/her capacity as: _____

is herewith authorized to enter into this agreement with **ESKOM SOC (LTD)**.

……

The parties record that the Contractor shall be responsible for the following in terms of this EMP Contract:

1. Comply with all the provisions of the EMP, in particular to prepare the listed Method Statements.
2. Comply with the requirements of the Occupational Health and Safety Act (no. 85 of 1993).
3. Ensure sub-contractors comply with the EMP.
4. Enforce compliance with the EMP by:
    - Appointing an Environmental Control Officer and
    - Ensuring that staff is familiar with the EMP.
5. Protect the environment of the site against environmental damage and rehabilitate any damage caused.
6. Failure to comply with the provisions of the attached EMP will result in the implementation of the fines as listed.
7. Reported non-compliance may result in the suspension of work or termination of the contract.

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

APPENDIX 5
SCHEDULE OF FINES FOR ENVIRONMENTAL DAMAGE OR EMP TRANSGRESSIONS

(Based on City of Cape Town: Standard Environmental Specifications – Ver. 5 (03/2002))
Note: The maximum fine for any environmental damage will never be less than the cost of applicable environmental rehabilitation.

EMP TRANSGRESSION OR RESULTANT ENVIRONMENTAL DAMAGE	MIN. FINE	MAX. FINE
Failure to comply with prescriptions regarding appointment of an ECO and monitoring of Construction EMP compliance.	R500	R1000
Failure to comply with prescriptions regarding environmental awareness training.	R500	R5000
Failure to comply with prescriptions regarding method statements.	R500	R5000
Failure to report environmental damage or EMP transgressions to the ECO.	R500	R1000
Failure to carry out instructions of the ECO regarding the environment or the EMP.	R500	R1000
Failure to comply with prescriptions posting of emergency numbers.	R500	R5000
Failure to comply with prescriptions regarding a complaints register.	R500	R1000
Failure to comply with prescriptions regarding information boards.	R500	R1000
Failure to comply with prescriptions regarding site demarcation and enforcement of 'no go' areas.	R500	R5000
Failure to comply with prescriptions regarding site clearing.	R500	R5000
Failure to comply with prescriptions for supervision for loading and off-loading of delivery vehicles.	R500	R1000
Failure to comply with prescriptions for securing of loads to ensure safe passage of delivery vehicles.	R500	R1000
Failure to comply with prescriptions for the storage of imported materials within a designated contractor's yard.	R500	R1000
Failure to comply with prescribed administration, storage or handling of hazardous substances.	R500	R1000
Failure to comply with prescriptions regarding equipment maintenance and storage.	R500	R1000
Failure to comply with fuel storage, refuelling, or clean-up prescriptions.	R500	R1000
Failure to comply with prescriptions regarding procedures for emergencies (spillages and fires).	R1000	R5000
Failure to comply with prescriptions regarding construction camp.	R500	R5000
Failure to comply with prescriptions for the use of ablution facilities.	R500	R1000
Failure to comply with prescriptions regarding water provision.	R500	R1000
Failure to comply with prescriptions for the use of designated eating areas, heating source for cooking or presence of fire extinguishers	R500	R1000
Failure to comply with prescriptions regarding fire control.	R500	R5000
Failure to comply with prescriptions for solid waste management.	R500	R5000
Failure to comply with prescriptions regarding road surfacing.	R500	R5000
Failure to comply with prescriptions to prevent water pollution and sedimentation	R500	R5000
Failure to comply with prescriptions to the protection of natural features, flora, fauna and archaeology.	R500	R5000
Failure to comply with prescriptions regarding off road vehicle access to the beach	R500	R5000
Failure to comply with prescriptions regarding speed limits.	R500	R1000
Failure to comply with prescriptions regarding noise levels of construction activities.	R500	R5000
Failure to comply with prescriptions regarding working hours.	R500	R5000
Failure to comply with prescriptions regarding aesthetics.	R500	R1000
Failure to comply with prescriptions regarding dust control.	R500	R1000
Failure to comply with prescriptions regarding security and access onto private property	R500	R1000
Failure to comply with prescriptions regarding cement and concrete batching	R500	R5000

For each subsequent similar offence committed by the same individual, the fine shall be doubled in value to a maximum value of R50,000.