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INDUSTRIAL SERVICES



DELTA-EPSILON TRANSMISSION POWER LINE PROJECT

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

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Document Control Sheet

Project Name: Delta – Epsilon Transmission Power Line Project

Project Ref: 12/12/20/887

Report Title: 294-03: Proposed Delta – Epsilon Transmission Power Line Environmental Management Plan (EMP)

Doc Ref: 294-03

Date: August 2009

	Name	Position	Signature	Date
Prepared by:				
Reviewed by:				
Approved by:				
For and on behalf of PBA International				

Revision	Date	Description	Prepared	Reviewed	Approved
1					
2					
3					

DOCUMENT CONTROL REGISTER AND DATA SHEETS

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Table A2: Key Personnel

Function	Name / Cell No	Responsibility
Project Manager (PM) Eskom		Overall management of project and EMP implementation
Site Supervisor/ Contract Manager (CM) Eskom		Oversees site works, liaison with Contractor, PM and ECO
Environmental Control Officer (ECO) Eskom		Implementation of EMP and liaison between Eskom, Contractor and Landowners
Contractor (C)		Implementation and compliance with recommendations and conditions of the EMP, Appoints dedicated person (CELO) to work with ECO
Contractor Environmental Liaison Officer (CELO)		Implementation of EMP, landowner interaction, environmental control of site actions, re-mediation and rehabilitation work.
Tx Services Environmental Advisor (Eskom)		Environmental advice and auditing

SAHRA – Area Representative		
Landowner		
Local Fire Protection officer		
Local Security Service Provider		
Local Social Services NGO		
Local General Trading Store or Co-op		
Local Parks Board Wildlife Protection Officer		

ECO: Environmental Control Officer (Can be the Eskom Site Supervisor)

C: Contractor

CM: Contract Manager (Eskom)

CELO: Contractor Environmental Liaison Officer (Dedicated person)

PM: Project Manager (Eskom)

ABOUT THIS DOCUMENT

This Environmental Management Plan (EMP) is for the operation of Eskom Transmission in executing Delta – Epsilon Transmission Power Line Project area covering all identified corridors within the project area. The aim of this EMP is to provide guidance on appropriate environmental management measures to support planning, construction, operations and decommissioning activities undertaken by Eskom for Delta – Epsilon Transmission Power Line Project.

An EMP is a dynamic document. It is amended and updated during the life of the activity. Therefore, it is intended this document will be reviewed and updated on a regular basis and it is important that the reader seeks the most up to date version. In addition to setting out guidelines for good environmental management of the process, this document also sets out responsibilities for implementation and procedures for corrective action and reporting of incidents. Such incidents would include:

- An environmental incident; where damage to any part of the environment is discovered through normal site inspections or where reported by the public; and
- A non-conformance; where implementation of this EMP or any corrective action has not been carried out as per specification.

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ACRONYMS

CELO: Contractor Environmental Liaison Officer

CM: Contract Manager

DEAT: Department of Environmental Affairs and Tourism

DSR: Draft Scoping Report

EAP: Environmental Assessment Practitioner

ECO: Environmental Control Officer

EIA: Environmental Impact Assessment

EIR: Environmental Impact Assessment Report

EMP: Environmental Management Plan

GPS: Global Positioning System

I&AP: Interested and affected party, refers to all those individuals and organizations that may have an interest in the detail and outcome of the EIA

MSDS: Materials Safety Data Sheets

MW: Mega Watt (=1,000,000 Watts), unit of measurement of power output (egg from power stations)

NCR: Nonconformance Report

PPE: Personal Protective Equipment

RoA: Record of Authorisation

SHE: Safety Health and Environment

WHO: World Health Organisation

LIST OF UNITS

kV: Kilo volt (=1000 volts), unit of measure of electric potential, but also a common measure of the capacity of a power line

masl: metres above sea level (a standard measure of land altitude)

m³/h: cubic metres per hour, a measure of flow rate of a fluid.

1. INTRODUCTION

The construction, refurbishment or upgrading of electricity supply infrastructure can have a major impact on the environment. Construction of a new electricity supply infrastructure and upgrading of an existing facility are regulated by the National Environmental Management Act, 107 of 1998. Numerous risks require consideration and management intervention during the construction phase of a development project. This Safety, Health and Environmental Management Programme serves to highlight and pre-empt those risks by introducing imperatives for implementation by construction personnel to protect, conserve and sustain the environment associated with the construction project.

The Integrated Environmental Management process, as prescribed by the Department of Environmental Affairs and Tourism (DEAT), ensures that environmental criteria are incorporated into the project process to enable the sustainable management of a power line from the beginning of the project to the decommissioning and dismantling of the line. The Environmental Management Plan (EMP), which is a dynamic document subject to revision and amendment, specifically ensures that environmental concerns are integrated into the design, construction, operation and maintenance phases of the project.

EMP objectives

All environmental safeguards are carried out correctly

Site activities are well-managed

Adverse impacts on the environment are minimised

The biodiversity of the site is conserved or enhanced

All relevant legislation is complied with, and

The project is monitored for environmental impact.

This document has been prepared on the basis of the route set out in the Draft Environmental Impact Assessment Report (DEIR) by Margen Industrial Services (Margen) in July 2009. It is written under the assumption that the contractor will be issued a full copy of that report.

It is intended that this document will be reviewed and updated or amended during the life cycle of the power line, but in particular at the following milestones:

- On completion of the establishment of the line servitude;
- On completion of the design phase of the power lines;
- At construction tender stage;
- At regular intervals during construction;
- On completion of construction;
- At handover to the regional/local office for maintenance;
- At regular periods during the maintenance and operation of the line; and
- On decommissioning of the power line.

In the main, this document addresses the construction and operational phases of the life cycle of the power line. However, the EIA study identified management and mitigation to be addressed during the design phase and servitude negotiation phase of the project and these will also need to be considered and reviewed by the design team and the negotiator. Hence, this EMP is intended to be applied earlier than the construction phase.

2. HOW TO USE THIS DOCUMENT

It is the responsibility of the landowner to ensure the protection of the environment on that property as well as on the surrounding environment from any impacts arising from any activities on that land. In the case of a power line, the servitude agreement will place this responsibility on Eskom. Eskom will own the land and will therefore be responsible for environmental management. Eskom will therefore be accountable for the implementation of this EMP, or any future updates or replacements of this document.

Many of the implementation activities will be delegated, either internally within Eskom staff, or externally to contractors and sub-consultants. This section sets out the basic steps in using this document and is aimed at the different potential users of the document.

Key aspects of implementation

- Any person or organisation involved in design, servitude negotiation, construction, operation, maintenance or decommissioning any part of the development needs to receive a copy of the latest version of this document;
- The EIA for the development, and any subsequent specialist assessments, describes the environment and environmental issues, and must accompany the EMP. This EMP cannot be properly implemented without the EIA documentation;
- The appropriate sections of the EMP and EIA need to be communicated to all personnel involved in the development. Training and education of all personnel on environmental matters is a key requirement in the successful implementation of EMP. Training methods and programmes will take place at different levels, and must be set up by the Eskom Environmental Officer (see responsibilities in Section 6.2); and
- The identities and roles of those responsible for the implementation of the EMP must be clearly set out and included with the latest version of the EMP at all times. (see Section 6.0)

3. PERTINENT ENVIRONMENTAL LEGISLATION

Environmental authorisation for power lines and electricity supply infrastructure is required in terms of the National Environment Management Act No 107 of 1998. As part of this authorisation, the Record of Authorisation (RoA) invariably contains conditions under which the development may proceed and typically this will include the preparation, approval and implementation of an EMP. The nature of this development is that an EMP is a likely condition of environmental authorisation, and it will thereby be legally enforced.

3.1. CONVENTION ON BIOLOGICAL DIVERSITY (CBD)

In terms of the Convention on Biological Diversity, to which South Africa is also a party, the State has a duty to conserve and rehabilitate biological resources considered important for the conservation of biological diversity.

Article 8 provides that:

“Each Contracting Party shall, as far as possible and as appropriate:

(c) Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use;

(f) Rehabilitate and restore degraded ecosystems and promote the recovery of threatened species, inter alia, through the development and implementation of plans or other management strategies.

(k) Develop or maintain necessary legislation and/or regulatory provisions for the protection of threatened species or populations”.

3.2. CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA ACT, ACT NO. 108 OF 1996

States that every one has a right to an environment that is not harmful to their health and wellbeing and as such Eskom should conduct its business in a manner that does not result in environmental pollution and ecological degradation, contributes to the conservation of natural and cultural heritage and national economic and social development.

3.3. ATMOSPHERIC POLLUTION PREVENTION ACT, NO. 45 OF 1965

Section 27 - 35: Dust control.

Regulations:

-GN. 1044, GG5716 of 1977-08-19: Regulations to prevent the dispersion in the atmosphere of matter that may cause a nuisance.

3.4. CONSERVATION OF AGRICULTURAL RESOURCES ACT, NO. 43 OF 1983

Section 2: Application of the Act.

Section 5: Prohibition of the spreading of weeds.

Section 6: Control measures.

Section 7: Directions

Section 8: Schemes

Section 12: Maintenance of Soil Conservation Works and maintenance of certain states of affairs.

Section 25: Liability of employer or principal.

Regulations:

- GN.1044, GG9238 of 1984-05-25: Weed control scheme.

- GN. 1045, GG9238 of 1984-05-25: Bush control scheme.

- GN.1047, GG9238 of 1984-05-25: Soil conservation scheme.

- R.1048, GG9238 of 1984-05-25: Control measures, weeds and invader plants.

3.5. FENCING ACT, NO. 31 OF 1963

- Section 10: Repair of boundary fences.
- Section 11: Alteration of boundary fences.
- Section 23: Climbing or crawling over or through fences without permission.
- Section 24: Wilful damaging or removal of fences.
- Section 26: Unintentional damaging of fencing.
- Section 29: Settling of disputes.

3.6. HEALTH ACT, No. 63 OF 1977

- Section 38: Regulations relating to rubbish, night-soil, sewage or other waste and reclaimed products.

3.7. MINERALS AND PETROLEUM RESOURCES DEVELOPMENT ACT, No. 28 OF 2002

- Section 38: Integrated environmental management and responsibility to remedy

3.8. NATIONAL ENVIRONMENTAL MANAGEMENT ACT, No 107 OF 1998

At time of writing the EIA regulations still fall under the Environment Conservation Act No 73 of 1989 (see 3.4 above). However, the principles of environmental management as set out in NEMA (and its amendments) will apply to construction sites and will influence judgment made by authorities in respect of any environmental damage. Particularly relevant sections include:

- Section 11: Environmental implementation and environmental management plans
- Section 12: Purpose and objects of environmental implementation and management plans
- Section 14: Content of environmental management plans
- Section 15: Submission, scrutiny and adoption
- Section 16: Compliance with environmental management implementation and management plans
- Section 24: Integrated environmental management – Implementation
- Section 28: Duty of care and remediation of environmental damage
- Section 29: Protection of workers refusing to do environmentally hazardous work
- Section 30: Control of emergency incidents
- Section 31: Access to environmental information
- Section 32: Legal standing to enforce environmental laws

3.9. NATIONAL HERITAGE COUNCIL ACT, No. 11 OF 1999.

The demolition or dismantling of all man made structures and buildings older than 60 years require the authorisation of the relevant provincial heritage council.

3.10. NATIONAL HERITAGE RESOURCES ACT, No 25 OF 1999.

A permit is required for the disturbance, removal or destruction of any national or provincial heritage site, archaeological site or palaeontological site, burial ground, grave, or any public monument or memorial.

Section 36:	Burial grounds and graves
Section 38:	Heritage resources management
Section 48:	Permits

3.11. NATIONAL WATER ACT, NO 36 OF 1998.

Section 19:	Prevention and remedying effects of pollution
Section 20:	Control of emergency incidents
Section 21:	Water use
Section 27:	Considerations for issue of general authorizations and licences.

It should be noted that the term ‘water use’ includes works to riverbanks, temporary crossings, temporary impoundments, abstractions and discharges. All of these may occur during the construction of power lines. Consultation with the regional office of DWAF is advised.

3.12. DWAF MINIMUM REQUIREMENTS FOR THE HANDLING, CLASSIFICATION AND DISPOSAL OF HAZARDOUS WASTE 1998

- Duty of Care Principle
- Polluter Pays Principle
- Precautionary Principle

4. PROJECT SCOPE

Eskom is expanding transmission and generation infrastructure to ensure that there is sufficient generation capacity to sustain the country’s economic growth. The sustained economic growth in South Africa has impacted significantly on electricity growth. Currently Eskom is planning expansion of the system with an average load forecast of 4% increase per annum. Eskom Generation has had to keep up with load demand hence the need for new base load power stations.

Transmission integration studies indicated that the optimal solution to minimise the number of planned transmission power lines from Mmamabula and Medupi Power Stations was to couple the two power stations to the new Delta substation near Lephalale. In order to transmit the power to load centres in the Rustenburg/Brits area, Gauteng and further south, Eskom Transmission plans to build six new extra high voltage transmission lines from Delta substation to a new substation (Epsilon) near Potchefstroom.

This EMP concentrates on the proposed transmission power lines to be constructed between Delta and Epsilon substations.

This project forms part of the Mmamabula/Medupi Transmission Integration Project that also includes the following projects that have all undergone or are undergoing separate environmental impact assessments:

- 4 x 400kV transmission power lines between Mmamabula PS in Botswana and the proposed Delta substation near Lephalale;

- 4 x 400kV transmission power lines between Medupi PS and Delta substation and the construction of the Delta substation;
- 2 x 400kV transmission power lines from Medupi PS to Dinaledi substation near Brits via Spitskop;
- 1 x 400kV transmission power line from Medupi PS to Marang substation near Rustenburg;
- Construction of the 1 x 765/400kV step-down Epsilon substation located southwest of Potchefstroom and associated 765kV and 400kV turn-ins.

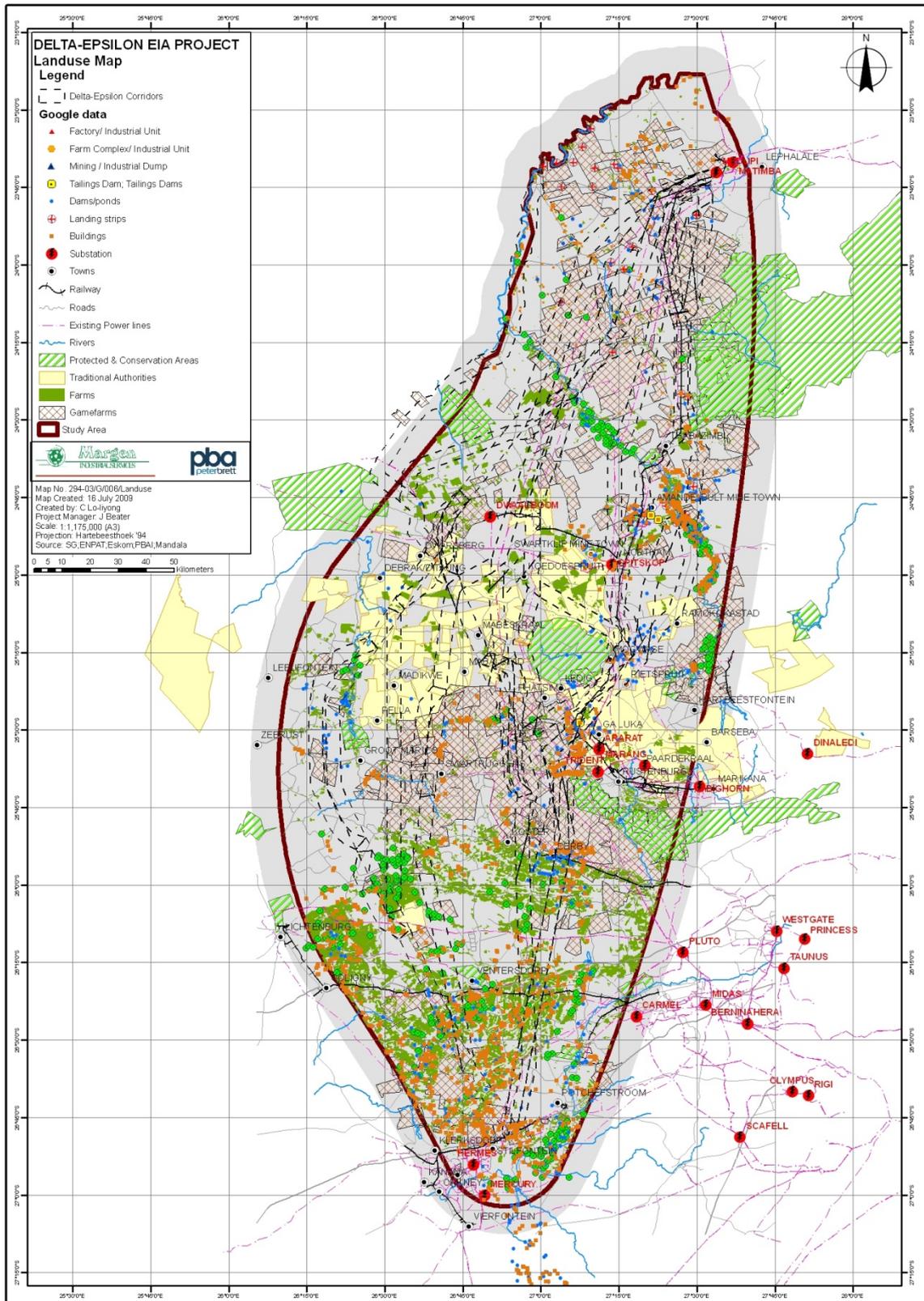


Figure 1: Project Area Depicting Proposed Power Line Corridors

5. TECHNICAL SPECIFICATIONS OF THE LINE

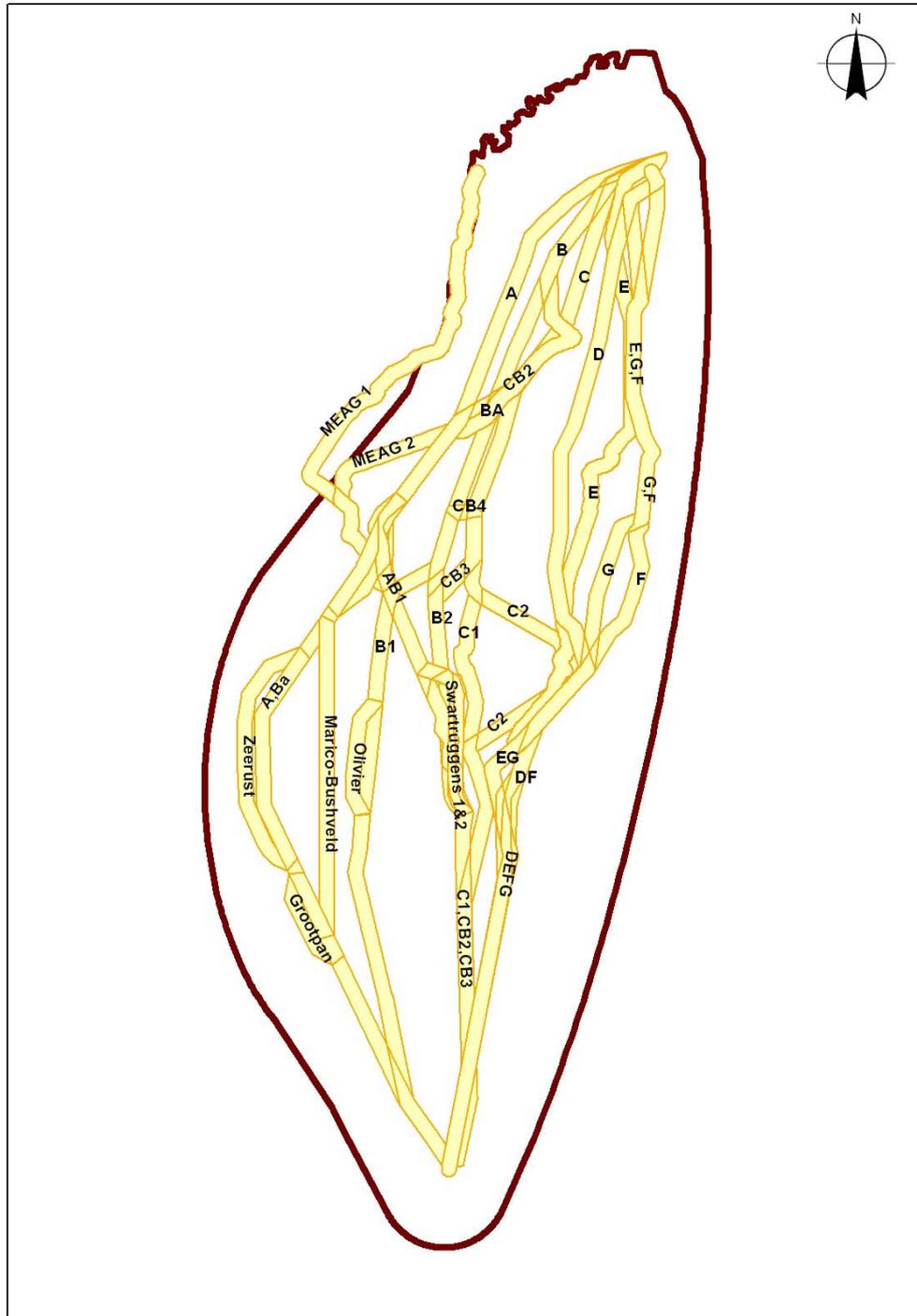


FIGURE 2: LINE OPTIONS

5.1. LENGTH

The length of **Corridor C_B3** will be approximately 360 km.

The length of **Corridor D** will be approximately 360 km.

5.2. SERVITUDE WIDTH:

The servitude width is 80 m. Construction is limited to the 240m servitude in which the line will be constructed. A 6m strip shall be cleared flush with the ground to facilitate access and construction, except where tower erection and stringing requires more space. Any extra space outside the servitude shall be negotiated with the relevant Landowner and approved by Eskom. All areas marked as no go areas inside the servitude shall be avoided and demarcated.

5.3. TOWER SPACING:

Tower spacing	: 300-500m. (Average)
Tower height	: 55m. (Average)
Conductor attachment height	: Eskom?m. Average)
Conductor type	: Eskom?.
Minimum ground clearance	: 10.4m.

5.4. TOWER DESIGN:

The following types of towers may be used on this project:

- Compact cross rope suspension tower.
- Guyed-V suspension tower.
- Self-supporting double circuit tower.
- Self-supporting strain tower.

5.5. MAJOR ACTIVITIES OF THE PROJECT

The project involves 18 major activities. These are:

1. Environmental Impact Assessment – Copy of RoA appended to this document.
2. Negotiations for the servitude –Landowners list and details appended.
3. Land survey to determine exact placement of the line towers.
4. Drawing work to produce the profiles for construction – profiles included.
5. Erection of camp sites for the Contractors' workforce.
6. Negotiations for access roads to the servitude.
7. Servitude gate installation to facilitate access to the servitude.
8. Bush clearing to facilitate access, construction and the safe operation of the line.
9. Establishing of access roads on the servitude.
10. Transportation of equipment, materials and personnel.
11. Installation of foundations for the towers.
12. Tower assembly and erection.
13. Conductor stringing and regulation.
14. Final inspection of the line and hand over to region for operation.
15. Rehabilitation of disturbed areas.
16. Signing off Landowners.
17. Handing and taking over of the servitude.

18. Operation and maintenance of the line.

The final inspection for the release of the Contractors' guarantee takes place one year after completion of the project. The line will be in operation immediately after completion of the project and will stay operational for the lifetime of the plant. Subsequent maintenance and refurbishment can extend the operational lifetime of the plant substantially.

6. THE ADMINISTRATIVE STRUCTURE

This section describes the roles and responsibilities of the key stakeholders involved in the development, implementation and review of the EMP. Eskom, as the project proponent, is responsible for the development and implementation of the EMP and, where relevant, ensuring that any conditions by the Department of Environmental Affairs and Tourism (DEAT) are satisfied. Where construction or operation activities are contracted out (e.g. to Contractors and Subcontractors), the liability associated with non-compliance of those Subcontractors still rests with Eskom (unless otherwise agreed upon between the authorities, Eskom and the contracting parties). Eskom is, therefore, responsible for liaising directly with the relevant authorities with respect to the preparation and implementation of the EMP and meeting DEAT conditions.

6.1. PROJECT MANAGER

Eskom must identify a Project Manager who has overall responsibility for managing the site operations and Contractors and for ensuring that the environmental management requirements are met. All decisions regarding environmental procedures and protocol must be approved by the Project Manager, who also has the authority to stop any activity in contravention of the EMP.

The Eskom PM bears the ultimate responsibility for the project and is thus responsible for environmental performance. The Project Manager will ensure the implementation of this EMP through the supervision of the Environmental Control Officer (ECO, see below).

6.2. ENVIRONMENTAL CONTROL OFFICER

On site, the project manager is represented by the ECO on environmental management matters. The ECO will be responsible for, but not restricted to, the following:

- Documentation and record keeping;
- Regular inspections and tight control throughout the construction period;
- Education and training of all personnel about the EMP and its implementation;
- Liaison between the Eskom, Contractors, authorities, landowners and other lead stakeholders on all environmental concerns;
- Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective;
- Monitoring the performance of the Contractor (and Sub-contractors) and ensuring compliance with the EMP and associated Method Statements;
- Validating the regular site reports prepared by the Contractor;

- Checking the Contractor's record of environmental incidents (spills, impacts, legal transgressions etc) as well as corrective and preventive actions taken;
- Checking the public complaints register in which all complaints are recorded, as well as action taken;
- Issuing of site instructions to the Contractor for corrective actions required;
- Assisting in the resolution of conflicts;
- Communication of all modifications to the EMP to the relevant stakeholders; and
- Conducting regular audits to ensure that the system for implementing the EMP is operating effectively.

It is increasingly common for developments of this nature for the principal Contractor to also have a full time environmental officer on site. Eskom's ECO will therefore need to liaise with the Contractor's ECO on site aspects. The relationship between Eskom's ECO and the Contractor's representative will be important and it is important that a good mutual understanding of standards is gained at an early stage in the project. The ECO should have appropriate training and experience in the implementation of environmental management specifications. The ECO provides feedback to the Project Manager regarding all environmental matters. Contractors are answerable to the ECO (or Project Manager, depending on contractual arrangements) for non-compliance with the requirements stated in the EMP.

The ECO shall be appointed one month before the start of construction and the ECO shall maintain a site diary, a schedule of current site activities and the monitoring thereof and a complaints register of all public complaints and how the complaints were dealt with.

The ECO must remain employed until all rehabilitation measures as required are completed and the site is handed over to Eskom by the contractor for operation.

Occasionally developments of this nature lead to the appointment by the principal Contractor of a full time Environmental Officer on site. Eskom's ECO will therefore need to liaise with the Contractor's ECO on site aspects. The relationship between Eskom's ECO and the Contractor's representative will be important and it is important that a good mutual understanding of standards is gained at an early stage in the project.

6.3. CONTRACTOR ENVIRONMENTAL LIAISON OFFICER (CELO)

The main functions of the Contractor Liaison Officer (CLLO) will be to liaise with landowners and provide an opportunity for regular dialogue. The stakeholders should be provided with information on the progress with the implementation of the EMP (in particular, contact details, management actions and monitoring activities). The stakeholders should be provided with opportunity during the exploration and operational phases of the CBM project to provide input into the revisions of the EMP as well as the design of corrective actions where appropriate.

The main benefit of involving stakeholders in the EMP is to include local knowledge and to ensure that the EMP addresses aspects of the project that could be a source of social risk. Stakeholders need to understand that their safety, health and environment are not being

compromised. They should be kept informed (for example, via regular meetings, newsletters and notices) so that no uncertainty exists in this regard.

Additionally, a critical issue is to ensure landowner and community leader permissions for site access.

6.4. CONTRACTOR

Eskom requires a commitment from the Contractor to consider the following:

- The legal rights of the individual Landowner, Communities and Eskom Regional staff;
- Professional etiquette on and off site;
- Ensure quality in all work done, technical and environmental;
- Immediate resolution to problems and claims arising from damage thus ensuring smooth flow of operations;
- To underwrite Eskom's Environmental Policy at all times;
- To use this Environmental Management Programme for the benefit of all involved; and
- To preserve the natural environment by limiting any destructive actions on site.

No work shall commence until permission is granted from the Environmental Advisor from Transmission Engineering and the ROA from DEAT has been obtained. The Project Manager shall ensure that all conditions in the ROA are fulfilled before the Contractor occupies the site.

6.5. DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND TOURISM (DEAT)

The authorities may be required to perform the following roles:

- Review the draft EMP submission. Based on the review, the DEAT will either (i) approve the EMP (with or without conditions), (ii) return the EMP for further improvement and resubmission, giving guidance on what needs to be revised or added, or (ii) reject the EMP, giving reasons;
- Review Monitoring and Audit reports;
- Review whether there is compliance by Eskom and Contractor with the terms of the EMP and ROA specifications, permit/license conditions. Whenever necessary, DEAT should assist Eskom in understanding and meeting the specified requirements; and
- The authorities may perform random controls to check compliance. In case of persistent noncompliance, Eskom will be required to provide an action plan with corrective measures and have it approved by the authorities.

6.6. PUBLIC CONSULTATION AND LANDOWNER LIAISON

The Public Consultation Process is a continuous process, and aims at establishing participatory involvement whereby stakeholders and other interested and affected parties are invited to review and comment on the project at a number of key stages. The process is in accordance with the International Finance Corporation (IFC) guidelines on Public Consultation and Information Disclosure (PCID). The key stakeholders include:

- a) Individuals or organisations that may be directly affected by the project.

- b) Representatives whose areas of responsibilities include part, or all of the project area.

This process is mainly undertaken to afford stakeholders an opportunity to define and shape the project by way of the issues raised.

It is good practice on such projects to consult with the following groups:

- Central Government Institutions with legislative mandates and decision-making powers over the use and conservation of natural resources likely to be affected by the construction and operations of the project. They also have the mandate to issue approvals in terms of permits and licences required as pre-requisites to certain activities or the use of some resources.
- Local Government Institutions have decentralised powers and responsibilities of implementing central government mandates at municipal level in terms of issuing out approval permits and in terms of providing social services at the local level.
- Tribal Authorities through which the grass roots masses can be reached by means of established committees and customary systems.
- Local Farmers Associations likely to be affected due to the project.
- Service providers were consulted particularly in terms of informing them of the project, establishing the existence of infrastructure likely to be affected by this project, also to establish areas of collaborations where possible.

The database was developed partly from the register compiled by the Environmental Assessment Practitioner (EAP) during the EIA process.

The contributions received from the interested and affected parties (I&APs) should support the design of achievable mitigation measures. In some cases, inputs from I&APs should shape the design of the management actions (e.g. identifying training needs in order to support use of local labour). I&APs should also be provided with updates on the progress of the project and the effectiveness of the EMP implementation during the construction and operational phases. During these project phases they should also be able to provide input into corrective actions where appropriate and to the revisions of the EMP.

6.7. INTERESTED AND AFFECTED PARTIES (I&APs)

The contributions received from the interested and affected parties (I&APs) should support the design of achievable mitigation measures. In some cases, inputs from I&APs should shape the design of the management actions (e.g. identifying training needs in order to support use of local labour). I&APs should also be provided with updates on the progress of the project and the effectiveness of the EMP implementation during the construction and operational phases. During these project phases they should also be able to provide input into corrective actions where appropriate and to the revisions of the EMP.

6.8. MONITORING AND REPORTING ROLES

The ECO shall keep a photographic record of any damage to areas outside the demarcated site area. The date, time of damage, type of damage and reason for the damage shall be recorded in full to ensure the responsible party is held liable. All claims for compensation emanating from damage should be directed to the ECO for appraisal.

A register shall be kept of all complaints from the Landowner or community. All complaints will be acknowledged in writing by the ECO within 48 hours of record in the register, and the ECO shall inform the complainant of the process that will follow. All claims shall be handled immediately to ensure timeous rectification / payment by the responsible party.

Eskom shall be held liable for all unnecessary damage to the environment, both on and off-site. Where such damage is due to Contractor negligence or accidental damage will be a matter between Eskom and the Contractor. All matters with landowners and other third parties will be addressed directly by an Eskom representative, typically the ECO.

The standard Eskom site documentation shall be used to keep records on site. All documents shall be kept on site and be available for monitoring purposes. Site inspections by an Environmental Audit Team may require access to this documentation for auditing purposes. The documentation shall be signed by all parties to ensure that such documents are legal. Regular monitoring of site works by the ECO is imperative to ensure that all problems encountered are solved punctually and amicably. When the ECO is not available, the Contract Manager / Site Supervisor shall keep abreast of all works to ensure no problems arise.

6.8.1. Non-conformance Reporting Procedures

Complaints and non-conformances involving landowners and community must be reported to Eskom and copied to the DEAT according to the following procedure:

Eskom should maintain the Complaints Register (refer to Appendix 3); this should be kept at an accessible location. The complainant has the right to request assistance from the security staff to complete the register. The complainant can also forward a copy of Complaint Registration to Eskom at:

Attention: The Information Officer
Eskom
Megawatt Park
Maxwell Drive
Sunninghill
Sandton

Postal Address:
Eskom
PO Box 1091
Johannesburg
2001

- The Complaint Registration Form will then be forwarded to the ECO. The ECO will forward completed Complaint Registration Forms to the relevant line function manager for appropriate action.
- The ECO will write to the complainant to –
 - acknowledge receipt of the Complaint Registration Form within 5 working days; and
 - Advise the complainant of a target completion date.
- The ECO will advise the complainant of the outcome in writing.
- Documentation, including investigation outcomes, will be placed on the confidential file held by the Project Manager.

6.8.2. Induction and training

Each employee of each subcontractor working on the project needs to receive environmental induction and be familiar with Eskom's policy documents. These include Health, Safety, and Environmental and any other relevant policy. The objectives and function of this EMP needs to be included in the induction process for each person. As a minimum the ECO must ensure all personnel must be familiar with the overall objectives of the EMP and those sections of the EMP relevant to their responsibilities and activities.

Environmental training must include:

- A site induction
- Emergency response training
- Familiarisation with site environmental controls, and
- Specific environmental training for relevant employees e.g. installing erosion and sedimentation controls, daily checks to maintain controls, cleaning up spills.
- Bring to attention of employee areas of environmental sensitivity and procedure with regard to these areas, for example, clearly demarcate, etc.

6.8.3. Auditing

An ECO will be responsible for regular inspections, monitoring and undertake periodic audits. However, it is expected the DEAT may visit the project area at any time to assess whether EMP implementation has been undertaken according to planned arrangements and that the EMP itself is being appropriately updated. The DEAT may also request an independent audit. The audit should confirm that identified corrective actions have been undertaken and then assess the effectiveness of such actions.

The ECO will:

- Establish audit procedures.
- Determine the frequency of audits.
- Undertake the audit objectively and competently.
- Maintain records of audits.

6.9. FREQUENCY AND CONTENT OF REPORTING

Two-weekly environmental compliance reports shall be forwarded to the Transmission Engineering Environmental Advisor (appointed per project) with all information relating to environmental matters. The following **Key Performance Indicators** must be reported on a two-weekly basis by the ECO:

- Complaints received from affected parties and actions taken;
- Environmental incidents, such as oil spills, etc. and actions taken;
- Incidents possibly leading to litigation and legal contraventions; and
- Environmental damage that needs specialised rehabilitation measures to be taken.

The following documentation shall be kept on site by the ECO:

- Site daily diary;
- Complaints register;
- Records of all remediation/rehabilitation activities;
- Copies of bi-weekly reports to the Transmission Engineering Environmental Advisor for auditing purposes;
- Copy of the Environmental Management Programme; and
- Minutes of site meetings including discussions on environmental issues.

6.10. EMP REVIEW

The EMP will be reviewed periodically as new information is made available, this includes

- New construction sites and sites under rehabilitation
- Changes in the activity
- New environmental issues
- Latest landowner liaison
- Inspections, audits and visits by authorities
- Major incidents

The extent and detail of the review of an EMP will need to be determined on a case-by-case basis. All the stakeholders identified could potentially participate in the review of the EMP.

7. SUMMARY OF KEY EMP ACTIONS

7.1. DESIGN AND NEGOTIATION PHASES

The environmental management of the life cycle of the project is an evolving process, to be reviewed and updated on a regular basis. The EIA is the start of the environmental management process with route selection and identification of main environmental issues and mitigation measures. While the construction phase is usually given the main attention for mitigation measures, the intervening design and negotiation phases are important in detailing and refining the measures identified in the EIA, and may even recommend alternative measures to be implemented. Hence the design and negotiation phases are included in the EMP activities and are assigned certain activities where appropriate in the Impact Tables in Section 9.

The main activities are summarised as follows:

- Establish the responsible individuals for the Eskom PM, Senior Negotiator and ECO as set out in Section 6.
- Appoint specialists to undertake detailed surveys:
 - Specialist botanist to complete a detailed plant survey and tree marking survey of the routes.
 - Specialist archaeologist to undertake a similar detailed survey of the servitude and substation.
 - Bird specialist to recommend locations for bird guards and flappers along the route.
 - Social impact specialist to advise on relocation of dwellings
 - Fire risk specialist to identify areas where additional mitigation measures may be required to reduce fire risk
- Further develop the environmental sensitivity maps presented in the EIA after the above surveys, and superimpose proposed tower designs, likely access routes and areas where construction by hand or helicopter will be required.
- Map landowner details and/or update database developed during EIA.

7.2. CONSTRUCTION PHASE

The EMP should form part of the contract documentation to the Principle Contractor for the construction phase. The following is a summary of key actions for this phase of the project:

- Establish clear understanding of responsible persons (Section 6) and lines of communication.
- Develop a construction management plan using the EIA, updated EMP and supporting maps and reports as provided during the design phase. Review landowner issues.
- Construction camp location to be finalised and approved by ECO.
- Communicate summary of construction programme and list of responsible persons (with contact details) to the affected landowners and interested community. The EIA stakeholder database will provide an effective basis for this.
- Training and informing all persons with all persons active in the construction process is a vital aspect in the implementation of the EMP. Initiate environmental information sessions with all personnel and the Eskom ECO is to ensure all personnel sign off attendance of such sessions.
- Procedures for recording and documenting environmental incidents, decisions, an agreement with landowners, etc. is to be established by the ECO and agreed with the principle Contractor.
- Regular reviews of the content and implementation of the EMP are to be undertaken by the ECO. Update the EMP and supporting documentation as required.
- Rehabilitation is to run in parallel with construction activities and not left to the very end of construction. The ECO should oversee the integration of rehabilitation activities where reasonably possible.
- The Eskom should undertake monthly audits of the EMP implementation.
- SEO to undertake final inspections with ECO and Principal Contractor.
- ECO to finalise update of EMP documentation and handover to responsible officer for the Operations Phase.

7.3. OPERATIONAL PHASE

The operations phase will be important for ensuring the stabilisation of the construction sites and the success of the rehabilitation works, as well as the long-term stability of the environment around the infrastructure during the operation of the lines as well as maintenance of power lines and servitudes. The key actions are summarised as follows:

- Establish responsible persons for this phase and communicate these (with contact details) to landowners and interested parties.
- Initiate environmental information sessions with all personnel and the Eskom ECO are to ensure all personnel sign off attendance of such sessions.
- Establish monitoring and reporting procedures for critical environmental aspects as prescribed by the latest version of the EMP. (Such aspects may include erosion and road maintenance, bird collisions, rehabilitation of grasslands, removal of invader species, etc.). Report to relevant authorities where appropriate.
- Oversee maintenance and any rehabilitation works.
- Update EMP as required.

7.4. DECOMMISSIONING PHASE

The procedures for decommissioning are not well tested for power supply infrastructure in South Africa. However, it is reasonable assumed that the process will be similar to the reverse of the construction process, and the same procedures are therefore recommended. These should be reviewed prior to decommissioning.

8. IMPACT TABLES AND EMP DETAILS

The following tables have been developed directly from the EIA for the development and have been updated for site-specific conditions. The main headings in the tables are as follows:

- Economic Issues
 - Local benefits
 - Tourism
 - Compensation
 - Loss of agricultural potential
- Well-being: Health and Safety
 - Electromagnetic fields
 - Fire hazards
 - Dust and noise
 - Use of creosote poles
 - Visual impact
- Social Issues
 - Relocation of people
 - Disruption of social networks and daily movement patterns
 - Grave sites
 - Property value reduction
- Biophysical Environment

- Season for construction activities
 - Erosion
 - Impact on fauna
 - Impact on avifauna
 - Impact on flora
 - Importation of alien species
 - Impact of herbicides
 - Impact on conservation areas
 - Impact on wetlands and rivers
 - Poaching of fauna and flora
- Archaeology, Cultural and Historical sites
 - Impact on heritage Resources
- Construction Impacts
 - Location of construction camps
 - Access roads
 - Access to properties
 - Traffic safety
 - Impact of construction camps
 - Immigration of construction workers
 - Consultation prior to construction
 - Potential temporary and long-term of infrastructure and services
 - Rehabilitation