ESKOM

DEA REFERENCE NUMBER: 12/12/20/1867

ENVIRONMENTAL MANAGEMENT PLAN FOR A 400KV DOUBLE CIRCUIT TRANSMISSION POWER LINE FROM FIRGROVE TO MITCHELL'S PLAIN AND MITCHELL'S PLAIN SUBSTATION

PREPARED BY:

BKS (Pty) Ltd

Environmental Management Department

PO Box 3173

Pretoria

0001

CONTACT PERSON

Mr PMFG Teurlings

Tel: 012 421 3500

PREPARED FOR:

Eskom Holdings Limited

Transmission Division: Land & Rights

PO Box 1091

Johannesburg

2000

CONTACT PERSON

Mr. K Makhanya

Tel: 011 800 2706

TITLE	:	**ENVIRONMENTAL MANAGEMENT PLAN FOR A 400KV DOUBLE CIRCUIT TRANSMISSION POWER LINE FROM FIRGROVE TO MITCHELL'S PLAIN AND MITCHELL'S PLAIN SUBSTATION**
Project Team	:	*BKS (Pty) Ltd*
Client	:	*Eskom Transmission: Land and Rights Division*
BKS Project No	:	*J01289*
Status of Report	:	*Draft Revision 01*
BKS Report No	:	*J01289/01*
Key Words	:	Environment, Eskom, Transmission Power Line, Transmission Substation, Environmental Management Plan (EMP)
Date of this Issue	:	*30 June 2011*

BKS Approval

Compiled by	:	R Swanepoel Initials & Surname	 Signature	30 June 2011 Date
Reviewed & Approved by	:	PMFG Teurlings Initials & Surname	 Signature	30 June 2011 Date

Eskom Approval

Reviewed by	:		
	Initials & Surname	Signature	Date
Confirmed by	:		
	Initials & Surname	Signature	Date
Approved by	:		
	Initials & Surname	Signature	Date

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF TERMINOLOGY AND DEFINITIONS

Term	Explanation
Activity	Any action needed for the design, construction and completion of a project.
Alien species	A species occurring in an area outside of its historically known natural range as a result of intentional or accidental dispersal by human activities.
Applicant	Means a person who has submitted - a) or intends to submit an application for an environmental authorisation; b) an application for an environmental authorisation simultaneously with his/her application for any right or permit in terms of the minerals and petroleum Resources Development Act, 2002.
Environmental aspect	A product's or production process's environmental impact or important issues in the environment that an organisation should take into consideration.
Communication register	A register aimed at tracking all communication activities within the project.
Conductor:	A wire, cable, or other body that is capable of carrying electric current.
Contaminated water	Water containing pollutants from on- or off-site activities; e.g. concrete-laden water and runoff from plant / personnel wash areas. Contaminated water must be treated for appropriate reuse or to ensure that water meets minimum standards and guidelines prior to disposal or being released into the environment.
Department of Environmental Affairs	The national authority responsible for the review and/or approval of an Environmental Management Plan.
Department of Water Affairs	The national authority responsible for and with authority over the nation's water resources and their use, including the equitable allocation of water for beneficial use, the redistribution of water, and international water matters.
Employer	See Eskom
Environment	The surroundings in which humans exist and which comprise: o the land, water and atmosphere of the earth; o micro-organisms, plant and animal life; o any part or combination and interrelationships; and o the physical, chemical, aesthetic, historical, cultural and economical properties and conditions of the foregoing that can influence human health and wellbeing.
Environmental Audit	Systematic, documented, regular and objective evaluation to see how well an organisation or facility is operating in terms of the Environmental Management Plan and is complying with statutory requirements and the organisation's Environmental Policy.
Environmental Authorisation	The authorisation by a competent environmental authority for commencement of listed activities in terms of the National Environmental Management Act (Act 107 of 1998).
Environmental Control Officer	An independent person who is responsible for undertaking site inspections to audit and report on compliance with environmental specifications with the Environmental Management Plan.

Term	Explanation
Environmental impact	Any change to the environment, whether adverse or beneficial, wholly or partially that results from an organisation's activities.
Environmental Impact Assessment	The process of collecting, organising, analysing, interpreting and communicating information in accordance with the environmental legal requirements set out in GNR. No 543, GNR. 544, GNR. 545 and GNR 546, as published in Government Gazette No. 33411 of 2 August 2010, promulgated in terms of Chapter 5 of the National Environmental Management Act (Act 107 of 1998) for the purposes of obtaining an Environmental Authorisation in accordance with Chapter 5 of the National Environmental Management Act.
Environmental Management Inspector	A person designated as an environmental management inspector in terms of Section 31B or 31C of the National Environmental Management Act (Act 107 of 1998).
Environmental Management Plan	A tool used to prescribe management mechanisms or methods for the prevention of undue or reasonably avoidable adverse environmental impacts and for the enhancement of the positive environmental benefits of a development.
Environmental objectives	The overall environmental goal arising from the Environmental Policy that an organisation sets itself to achieve, and is quantified where practicable.
Eskom	The Applicant
Fauna	All living biological creatures, usually capable of motion, including insects, and predominantly of protein-based consistency.
Fire danger index	A relative number denoting an evaluation of rate of spread or suppression difficulty of a fire in relation to specific combinations of fuel, fuel moisture and wind speed.
Fire hazard	The relative combination of fuel, oxygen and heat that could lead to the start and spread of a fire.
Fire Protection Association	An association registered in terms of the National Veld and Forest Fire Act (Act 101 of 1998) for the purposes of predicting, preventing, managing and extinguishing veld fires.
Flood line	The line or mark to which a flood could rise every 50 (1:50 year flood line) or 100 (1:100 year flood line) years.
Flora	All living plants, grasses, shrubs and trees typically incapable of easy natural motion and capable of photosynthesis.
Groundwater	Water that fills the natural openings in below-surface rock or unconsolidated sands.
Hazardous waste	Waste that, because of its chemical reactivity, toxic, explosive, corrosive, radioactive or other characteristics, causes danger or is likely to cause danger to health or the environment.
Heritage resources	Any place or object of cultural, archaeological or paleontological significance in terms of the National Heritage Resources Act (Act 25 of 1999).
Induction training	The training provided to new / existing employees to (re)acquaint them with the company structure, their specific job requirements, practical or organisational issues and occupational health, safety and environmental considerations required on the project.

Term	Explanation
Integrated Environmental Management	Integration Environmental Management is defined as: the promotion of the integration of the principles of environmental management, as set out in Section 2 of the National Environmental Management Act (Act 107 of 1998) in making decisions that may have a significant effect on the environment; the identification, prediction and evaluation of the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts and maximising benefits; ensuring that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them; ensuring an adequate and appropriate opportunity for public participation in decisions that may affect the environment; ensuring the consideration of environmental attributes in management and decision making, which may have a significant effect on the environment; and identifying and employing the modes of environmental management best suited to ensure that a particular activity is pursued in accordance with the principles of environmental management as set out in Section 2 of the National Environmental Management Act (Act 107 of 1998).
Interested and Affected Parties (I&AP)	Any person or group of people concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, customers and consumers, environmental interest groups, and the general public (after the Environmental Impact Assessment Regulations of September 1997 and Guideline Document: Environmental Impact Assessment Regulations of April 1998).
Kilovolt	A unit of potential differences equal to 1000 volts
Land Use	The arrangements, activities and inputs people undertake in a certain land cover type to produce, change or maintain it. This definition establishes a direct link between the land cover and the actions of people in their environment.
Materials	All kinds of items (other than plant) intended to form or forming part of the Permanent Works, including the supply-only materials (if any) to be supplied by the Contractor under the Contract.
Mitigate	The implementation of practical measures to reduce any adverse impacts or to enhance the beneficial impacts of an action.
No-go area	An area where construction activities are prohibited.
Non-compliance	Failure to comply with the requirements of the EMP.
Non-conformance report	A report outlining a deviation from process, procedure or compliance specifications.
Plant	The apparatus, machinery and vehicles used during the Permanent Works.
Pollution	Any change in the environment caused by substances or noise, malodours, dust or heat emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, where that change has an adverse effect on human health or wellbeing 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.

Term	Explanation
Potentially hazardous substance	A substance that can have a deleterious effect on the environment. Hazardous chemical substances are defined in the Regulations for Hazardous Chemical Substances, published in terms of the Occupational Health and Safety Act (Act 85 of 1993).
Precautionary principle	The basic principle that, when in doubt or when there is insufficient or unreliable information, actions must be undertaken that have minimum risk.
Pylon	A large vertical steel tower-like structure supporting high-tension electrical cables
Quality management system	A set of interrelated or interacting elements that organisations use to direct and control how quality policies are implemented and quality objectives are achieved.
Rehabilitation	Re-establishment or restoration to a healthy sustainable capacity or state.
Resource recovery	Recycling of waste or the recovery of energy.
Route	The exact servitude in which the Transmission power line could be built
Servitude Right	A real right in favour of the servitude holder allowing the erection and maintenance of structures and cables to transmit electricity over portions of land and restricting any activities that could pose a hazard to the transmission of electricity, the environment and/or the safety of human and other living beings
Solid waste	All solid waste, including construction debris, chemical waste, excess cement / concrete, wrapping materials, timber, steel, drums, wire, nails, food and domestic waste (e.g. plastic bags and wrappers).
Substation	A collection of equipment for the purpose of raising, lowering and regulating the voltage of electricity
Target	The detailed performance requirement, applicable to the organisation, or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.
Waste minimisation	The reduction of the volume of waste during construction by means of different processes or clean technology.
Waste prevention	The prevention and avoidance of the production of waste.
Wastewater	Water containing cement washings, oil, fuel or other contaminants.
Water resource	A watercourse, surface water, estuary or aquifer.
Wetland	Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which, in normal circumstances, supports or would support vegetation that is typically adapted to live in saturated soil (as defined in the National Water Act (Act 36 of 1998)).
Works	The Permanent Works and the Temporary Works, or either of them as appropriate.

LIST OF ACRONYMS AND ABBREVIATIONS

Acronym / Abbreviation	Explanation
CoCT	City of Cape Town
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DWA	Department of Water Affairs
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
ECO	Environmental Control Officer
EO	Environmental Officer
EMP	Environmental Management Plan
FDI	Fire Danger Index
FPA	Fire Protection Association
GNR	Government Notice Regulations
I&AP(s)	Interested and Affected Party(ies)
MSDSs	Material Safety Data Sheets
NEMA	National Environmental Management Act (Act 107 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act 25 of 1999)
NWA	National Water Act, 1998 (Act 36 of 1998)
PCO	Pest Control Officer
PPE	Personal Protective Equipment
QMS	Quality Management System
SA	South Africa
SAHRA	South African Heritage Resource Agency
SHE	Safety, Health and Environment
SO	Social Officer
TEM	Transport, Earthmoving and Materials Handling Equipment

1 STRUCTURE OF ENVIRONMENTAL MANAGEMENT PLAN REPORT

The Environmental Management Plan (EMP) report consists of thirteen sections. The broad structure of the EMP is as follows.

1.1 Structure of the EMP

This section describes the structure of the EMP, based on the requirements of Section 34 of the EIA Regulation R385.

1.2 Introduction

This section provides a brief project background and description and addresses the broad legal framework. The broad legal framework distinguishes between the core legislative framework and project specific conditions.

1.3 Background to EMP

This section describes the nature of the EMP, the aims and objectives of the EMP and the continuous improvement approach that forms the basis of the environmental management approach.

1.4 EMP Framework

This section describes the Eskom Environmental Policy and the institutional and functional framework for the EMP. In this regard, the institutional and functional framework focuses on the roles and responsibilities of the:

- Applicant
- Independent Environmental Control Officer
- The Eskom Project Manager
- The Contractor
- The Environmental Officer
- The Social Officer

1.5 Summary of Impacts

This section describes the anticipated impacts which may be experienced during the construction and operation of the Transmission power line.

1.6 Assessment of impacts

This section identifies anticipated impacts in the study area.

1.7 Environmental documentation, reporting and compliance

This section describes the documentation, reporting and compliance procedures required to ensure the project complies with quality management processes.

1.8 Management of Environmental Requirements

This section describes the measures the Contractor shall use to record and report upon environmental management measures undertaken to mitigate impact upon the environment.

1.9 Training and induction of employees

This section describes the minimum training requirements prescribed to ensure all persons affiliated with the project work within the constraints of the EMP.

1.10 Suspension of works

The section describes measures to be implemented should the Contractor's actions not comply with the requirements contained in the EMP.

1.11 Resource allocations

The section describes the allocation of resources required by all parties to ensure the contract is completed within the constraints of best management practice.

1.12 EMP Implementation

This section focuses on the Aspect and Activities Matrix, as well as the respective EMP Implementation Tables. In this regard, the focus is on:

- Environmental Specifications - Construction Activities - Planning and Design Phase
- Environmental Specifications – Construction Activities – Pre – Construction
- Environmental Specifications - Construction Activities – Site Management
- Environmental Specifications - Construction Activities – Site office establishment
- Environmental Specifications – Tower Specific
- Environmental Specifications – Rehabilitation Activities
- Environmental Specifications – Operational Activities
- Environmental Specifications – Decommissioning Activities

1.13 References

The references of sources used in this report are provided in Section 13.

2 INTRODUCTION

An Environmental Management Plan (EMP) is an environmental management tool used to prescribe management mechanisms or methods for the prevention of undue or reasonably avoidable adverse environmental impacts and for the enhancement of the positive environmental benefits of a development. An EMP is based on the findings of the Environmental Impact Assessment (EIA) process conducted in terms of the EIA Regulations. In terms of when the project was initiated, all works associated with the EIA process have been undertaken under the prevailing 2006 EIA Regulations (Government Notice No. 385, 386 and 387 in the Government Gazette of 21 April 2006) of the National Environmental Management Act (Act No. 107 of 1998) (NEMA). The EMP therefore complies with Section 34 of 385However, the EIA Regulations of 2010, are used as a guideline for the content of this EMP, as they provide for improved implementation of "best management practice".

This Draft EMP will be submitted with the EIA report to the Department of Environmental Affairs (DEA) for environmental authorisation.

An EMP describes the measures that need to be taken to ensure the Duty of Care is bestowed upon those who cause, have caused or may in future cause pollution or degradation of the environment, as per Section 28 (1) of NEMA. Section 28 (1) has been amended to include significant pollution or degradation that occurred before the commencement of NEMA, that arises or is likely to arise at a different time from the actual activity that caused the contamination or that arises through an act or activity of a person that results in a change to pre-existing contamination. Non-compliance to Section 28 (Duty of Care) is a criminal offence and may lead to criminal prosecution.

Although the Draft EMP forms part of the EIA report that is submitted for environmental authorisation, an EMP is a stand-alone document that is used to guide and regulate environmental performance through all stages of development, including planning, design, construction, rehabilitation and maintenance, and eventual decommissioning.

This EMP would need to form part of the tender documentation to the Contractor(s) and becomes legally binding on the Contractor(s) and anyone acting on behalf of the Contractor(s) or the Applicant during construction, operation and decommissioning activities.

Eskom Holdings Limited (Eskom) appointed BKS (Pty) Ltd (BKS) to undertake the EIA process and compile an EIA report for the construction of the 400kv Double Circuit Transmission Power Line from Firgrove to Mitchell's Plain and Mitchell's Plain Substation.

This Draft EMP was compiled during the EIA process and includes the mitigation measures recommended in the EIA Report. Even though in terms of the legislative process this EMP is referred to as a "draft" version, it is designed to be as site specific as possible. This approach has been agreed upon by the relevant specialists, Eskom and BKS to ensure all issues identified are sufficiently mitigated and presently for public comment, thereby ensuring the EMP presented during the authorisation process does not differ substantially from the EMP to be implemented during the construction of the Transmission power line.

Once an Environmental Authorisation (EA) has been received from the DEA, the Draft EMP will need to be finalised to include any additional conditions stipulated by the DEA in the EA. In addition, this Draft EMP is a dynamic document and may need to be updated on a regular basis, as directed by either the Environmental Control Officer (ECO) or the DEA.

2.1 Details of the authors

As per the requirements of the NEMA, the details and expertise levels of the persons who prepared the EMP are provided below.

Table 1: Authors' Details

EMP Specialist	BKS (Pty) Ltd
Contact Person	Robin Swanepoel
Postal address	PO Box 112, Bellville, 7535
Telephone	021 950 7500
Fax	021 950 7502
Email	robins@bks.co.za
Qualifications	B. Tech Nature Conservation B. Tech Environmental Management
Expertise to carry out preparation of EMP	Robin has 14 years of experience and has been involved in the implementation of various EMPs during the construction of the following: Transmission power lines (275 kV, 400 kV and 765 kV) for Eskom: • Beta – Delphi • Mercury – Perseus • Mercury – Zeus • Duvha – Leseding • Majuba – Umfolozi • Hydra – Gama • Spencer – Tabor • Poseidon – Grassridge • Dedisa – Grassridge • Bravo Construction of substations for Eskom: • Omega • Gamma • Mercury • Perseus • Hydra • Zeus • Majuba • Umfolozi • Dedisa

Robin Swanepoel, Chief Environmental Scientist: EMP and ECO, has been responsible for the compilation and compliance monitoring of numerous EMPs. Robin has intimate knowledge on the requirements of EMP implementation and drawing from this experience, has compiled this EMP.

Peter Teurlings, Departmental Head: Environmental Management of BKS is the Project Director and is responsible for reviewing the reports. Peter is registered as a Professional

Natural Scientist (Registration No 400027/95) in the Environmental Science field of practice in terms of Section 18(1) of the Natural Scientific Professions Act (2003) and is also a member of the South African Chapter of the International Association of Impact Assessments (IAIA). Peter has an MSc (Biogeography) and specialises in environmental assessment processes and Project Management. He has been involved in numerous different types of EIA processes including residential developments, Transmission power lines, wastewater treatment projects, water supply projects, dams, roads and airports in Southern Africa.

Project Director	**BKS (Pty) Ltd**
Contact Person	Peter MFG Teurlings
Postal address	PO Box 3173, Pretoria, 0001
Telephone	012 421 3500
Fax	012 421 3502
Email	petert@bks.co.za
Highest Qualification	MSc (Biogeography)
Professional membership	South African Council for Natural Scientific Professions (Reg No 400027/95) International Association of Impact Assessments – South Africa (ID No 1398).
Expertise to carry out review of EMP	Author, co-author and/or presenter of over 100 reports, presentations and manuals on EIAs, EMPs, and environmental management and other related studies, including: • Environmental Technical Coordinator for the Gautrain Project for the Gauteng Department of Transport, Roads and Public Works (2007 – present); • Environmental Screening Reports and EMPs for the safety rehabilitation of 19 large dams in South Africa for the DWA; • Assessment of the various options available for providing sanitation services to the Central Witwatersrand Regional Services Council's region; • EIA Review for the development of Phase 2 of the Mooi Mgeni Transfer Scheme and appurtenant works for DWA; • Conveyance, treatment and disposal of wastewater for Drainage District DD6 for ERWAT; • Upgrading an intersection on Road D374 in the Cradle of Humankind World Heritage Site; • Construction of a water reservoir and 3.3km of water supply pipeline in Lekurung near Polokwane; • Development of the Cosmo City Township in northern Randburg for Basil Read / Cosmo City Development Company; • Construction of the Heineken Brewery adjacent to the R25 on the road to Bapsfontein, Kempton Park, for Heineken Supply Company; • Construction of the Umfolozi-Empangeni 765kV Transmission Power Lines and Substation for Transnet Transmission; • Construction of a military installation at the De Aar School of Ammunition for SANABO; • Development of a new landfill site in the Msukaligwa Regional Municipality for the Gert Sibande District Municipality in Mpumalanga; and • Construction of a balancing dam in the Orange-Riet rivers transfer scheme near Jacobsdal in the Free State for the DWA.

2.2 Specialist input during the EIA

Table 2: Specialist Input during EIA Process

Name	Role on Team	Company
Peter Teurlings	Project Director, EAP and Professional Natural Scientist	BKS (Pty) Ltd
Bharat Gordhan	Project Manager: EIA and EMP	BKS (Pty) Ltd
Robin Swanepoel	EIA Assistance and EMP Specialist	BKS (Pty) Ltd
Simon von Witt	EIA Assistance	BKS (Pty) Ltd
Dr. David de Waal	Public Participation Leader and Social Impact Assessment (SIA)	BKS (Pty) Ltd
Eddie Mashau	Public Participation Facilitator	BKS (Pty) Ltd
Marti Moolman	Public Participation Manager	BKS (Pty) Ltd
Mamokete Maimane	Public Participation Administrator	BKS (Pty) Ltd
Elsje Greyling	Project Administrator	BKS (Pty) Ltd
Martin Steenkamp	GIS Coordinator	BKS (Pty) Ltd
Polly Sepeng	Graphic Designer	BKS (Pty) Ltd
Betsie le Roux	Ecological Investigation and Wetland Delineation	BKS (Pty) Ltd
SPECIALISTS		
Heather Davis	Geotechnical Investigation	BKS (Pty) Ltd
Mike Howard	Visual Impact Assessment	BKS (Pty) Ltd
Ingrid Snyman	SIA Assistance	Ingrid Snyman Development Consultants
Garry Patterson	Soil and Agricultural Potential Assessment	Agricultural Research Council
S G Ferreira	Agricultural Economic Potential Assessment	Agriconcept cc
Chris van Rooyen	Avifaunal Assessment	Chris van Rooyen Consulting cc
Tim Hart	Heritage Assessment	University of Cape Town (UCT)
Nick Helme	Fynbos Ecology Survey	Nick Helme Botanical Surveys
ESKOM TRANSMISSION		
Kentridge Makhanya	Project Manager	Eskom Transmission
Arthur Burger	Line Design Engineer	Eskom Transmission
Jose Diez-Serrano	Engineer	Eskom Transmission
Thamsanqa Ngcobo	Senior Planner	Eskom Transmission
Dalton Matshidza	Planner	Eskom Transmission
Sipho Shabalala	Surveyor	Eskom Transmission
Phumza Jizana	Negotiator	Eskom Transmission
Fred Grové	Geotechnical Engineer	Eskom Transmission

2.3 Legal review

The EMP has been legally reviewed as per the details contained in **Table 3** below.

Table 3: Legal Review

Name	Role on Team	Company
Adv. Nicolai Massyn	Enviro-Legal Review	GreenGain Technologies (Pty) Ltd

2.4 Project Description

The Cape Peninsular customer load network of the Western Grid of the Western Cape Province requires strengthening. As such, Eskom Holdings Limited (hereafter referred to as Eskom) applied for an environmental authorisation from the national Department of Environmental Affairs (DEA) for a proposed development, herein referred to as the Firgrove-Mitchell's Plain project (DEA Reference Number 12/12/20/1867). The project entails the proposed construction of the new Mitchell's Plain Substation and a 400kV double circuit Transmission power line from the Mitchell's Plain Substation to one of the following locations:

- the existing Firgrove Substation;
- the existing Stikland Substation; or
- a proposed switching station close to the existing 400kV Transmission power line from Palmiet Substation to Stikland Substation to load from the latter into this project.

BKS (Pty) Ltd (hereafter referred to as BKS) was appointed by Eskom as the independent Environmental Assessment Practitioner (EAP) to undertake the required Environmental Impact Assessment (EIA) for the proposed project. BKS meets the requirements for the independent EAP in terms of GNR No. 385 of the EIA Regulations (2006).

The study area extends from the Firgrove area in the east to the Mitchell's Plain area in the south and west and the Stikland area in the north within the City of Cape Town Metropolitan Municipality (CoCT) (Please see Figure 1). The study area for the project traverses approximately 30km in length and a maximum of 1km on either side of the proposed alternative alignments. A servitude width of up to 55m for the power line needs to be acquired. .

BKS has also been appointed for another project that forms part of the strategic overview of the Cape Peninsular customer load network of the Western Grid of the Western Cape Province. That project entails the construction of a 400kV single circuit Transmission power line from the proposed new Mitchell's Plain Substation indicated above to the existing Philippi Substation, for which an upgrade is proposed (i.e. the Mitchell's Plain-Philippi project).

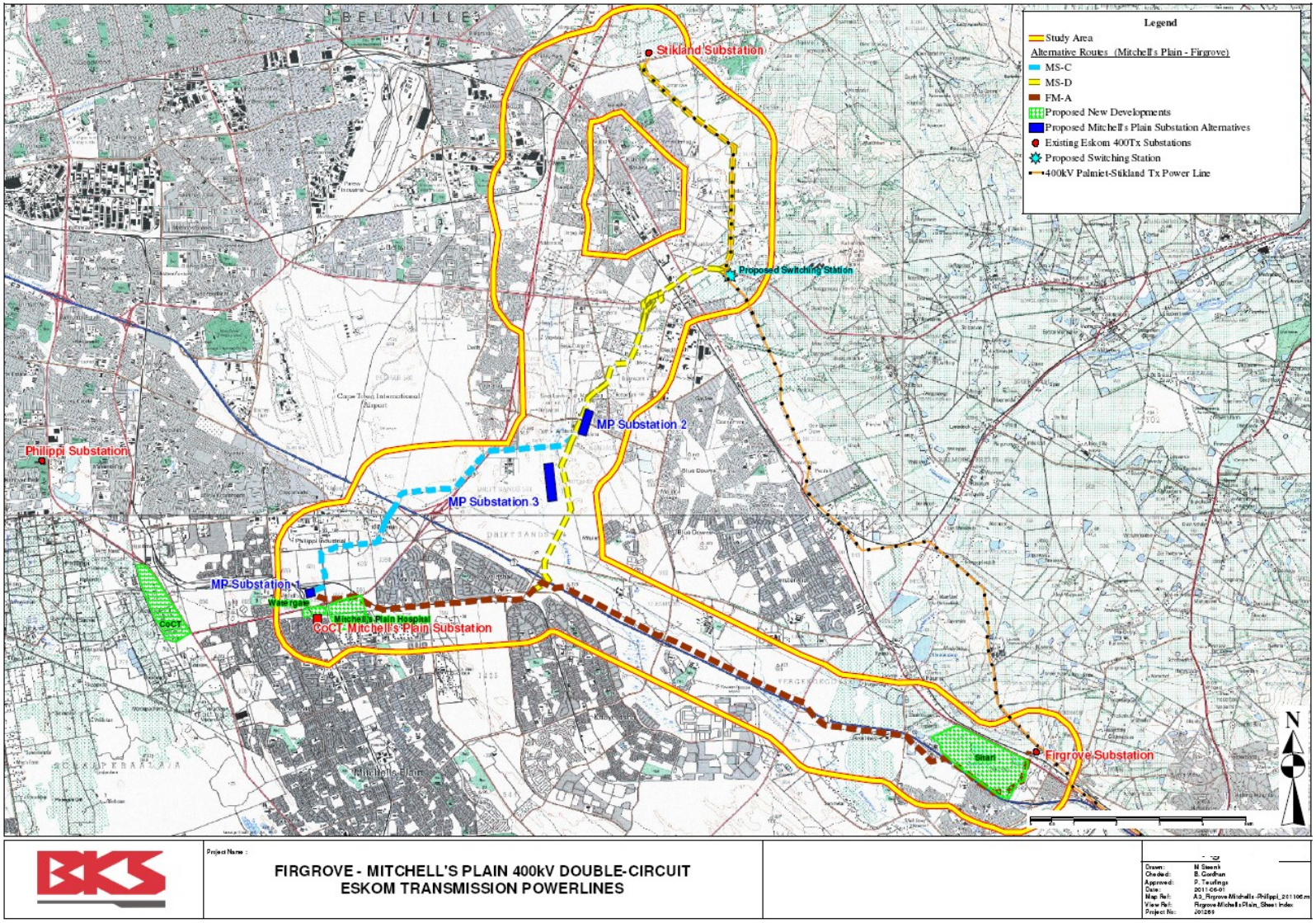

Figure 1: 400kv Double Circuit Transmission Power Line from Firgrove to Mitchell's Plain and Mitchell's Plain Substation Locality

2.5 Technical Specifications

2.5.1 Proposed Mitchell's Plain Substation

The Mitchell's Plain Substation will be approximately 350m × 350m (or 12,25 ha) in size. The Mitchell's Plain Substation will contain the following infrastructure:

- 2×500MVA MTS.
- 2×400kV Line bays
- Step down from 400kV to 132kV MTS in order supply the CoCT and Eskom Distribution.
- Telecommunication high mast.
- Administration building and security guard house structure.
- Approximately 3.5m high fencing around the substation site.

2.5.2 Existing Firgrove Substation Upgrade

The Firgrove Substation, an air insulation substation, will be upgraded in terms of the outcomes from a separate EIA process as undertaken by Enkanyini Projects.

2.5.3 Existing Stikland Substation Upgrade

The proposed upgrade to the existing Stikland Substation entails the addition of a line bay within the boundaries of the site to accommodate the proposed Transmission power line from the Mitchell's Plain Substation. Therefore, the footprint of the site will not be extended.

2.5.4 Switching Station

A switching station is a substation that does not contain transformers[1] (i.e. there is no transformation of electricity taking place) and operates at a single voltage level, in this instance, 400kV.

Switching stations are used as collector and distribution stations. Power from a source (Stikland Substation, such as in this instance, or the generator) is brought to a common busbar and distributed to other substations through Transmission or Distribution power lines.

A switching station can be used where the source is a distance from the load substations. The purpose of the switching station is to reduce the number of power lines to be built between load substations and the source.

The switching station is proposed to be established along the existing 400kV single-circuit Transmission power line from Stikland to Palmiet. This high voltage yard for the switching

1 Electricity is transformed between high and low voltages using transformers. Electricity may flow through many substations between the generating plant and the end-consumer, and may be changed in voltage in several steps, i.e. 765kV to 400kV to 275kV to 132kV and *vice versa*.

A substation that has a step-up transformer increases the voltage while decreasing the current, while a step-down transformer decreases the voltage while increasing the current for domestic and commercial distribution.

station would be 300m × 300m in size, which will accommodate any planned future expansion. The proposed switching station is to be located south and adjacent to the intersection of Stellenbosch Arterial Road (also known as Polkedraai Road) and Zewenwacht Link Road at the point where the 400kV Palmiet-Stikland Transmission power line crosses the former road. The property description is Portion 66 of the Farm Saxenburg No. 419, Stellenbosch

Gantry bays will need to be placed a maximum 80m from each other in order to guide the proposed 400kV Firgrove-Mitchell's Plain Transmission power line under the existing power lines and into the switching station.

2.5.5 Transmission Power Lines

This project intends establishing a 400kV double-circuit Transmission power line from the proposed Mitchell's Plain Substation to the existing Firgrove or Stikland Substations, or a proposed Switching Station as described previously. A single circuit Transmission power line has one energised power line on a pylon, whereas a double circuit Transmission power line has two energised power lines on a pylon. Refer to Section 2.7.2 for the alternative designs for the pylon structures to be used. The pylons have a maximum footprint on the ground of approximately 15m × 15m (225m^2) when built.

2.6 Servitude Agreement

The servitude width required to accommodate the towers on which the Transmission power line will be strung varies from 35m to 55m wide, depending on the type of pylon tower required. The servitude is required to ensure safe construction, maintenance and operation of the Transmission power line and Eskom will be entitled to unrestricted access.

For safety reasons, the Transmission power line requires minimum clearance distances, which are summarised as follows:

- The horizontal clearance to cater for Transmission power line swinging in adverse climatic conditions.
- The minimum vertical clearance distance between the ground and the Transmission power lines is 15m.
- The minimum vertical clearance to any fixed structure that does not form part of the Transmission power line is 0.4-11m.
- The maximum operational height under the tower conductors is 5.5m.
- Most farming activities can be carried out under the conductors, provided safe working clearances, building restrictions and restrictions to certain crop types, e.g. tree crops are adhered to.

Registration of the servitude gives Eskom the right to erect, operate and maintain the Transmission power lines and access the land to carry out such activities, but it does not constitute full ownership of the land. In turn, access and the activities must be carried out with due respect to the affected landowners. The servitude required for the project will be registered at the Deeds Office and will form part of the title deed of the relevant properties once the environmental authorisation has been obtained.

In areas where there is already Eskom (Transmission or Distribution) infrastructure, the servitudes will be recycled to a maximum 55m, depending on the type of pylon tower required.

2.7 Study Area of Project

The original study area of the project extends from the existing Firgrove substation (near Somerset West) to the proposed location of the Mitchell's Plain substation. The central focus of the infrastructure in the study area is the N2 National Road (N2) from the Macassar off-ramp to the Mews Way off-ramp.

At the public open day, which was held in Firgrove on 7 May 2010, an I&AP suggested a further route alignment alternative that was not part of the original study area. The suggested route is from the existing Stikland substation to the proposed Mitchell's Plain Substation as opposed to the proposed route from the existing Firgrove Substation to the proposed Mitchell's Plain substation (see Figure 1).

2.7.1 Construction Process for Transmission Power Lines

The construction process as shown in Table 5 will be followed for the entire route of the new Transmission power lines. Activities will be done in steps so that, at any point, an observer will see a chain of events with different working teams involved. At any time, some or all of the different teams may be working at different points along the line. Construction of this line will take a maximum of 12 months to complete, and is anticipated to begin before the end of 2012.

2.7.2 Tower Design

Different types of pylon towers shall be considered for the proposed development. Different pylon tower types have different impacts on the land use. The following alternative pylon structures were considered:

- Self-supporting Tower (**Figure 2**);
- Braced Post Monopole **(Figure 3**).
- Conventional V-String Monopole (**Figure 4**).
- Braced Post Twin (Vertical) Pole (**Figure 5**).
- Twin (vertical) Pole with Flat Circuit Configuration (**Figure 6**).
- Twin (inclined) Pole with Flat Circuit Configuration (**Figure 7**).

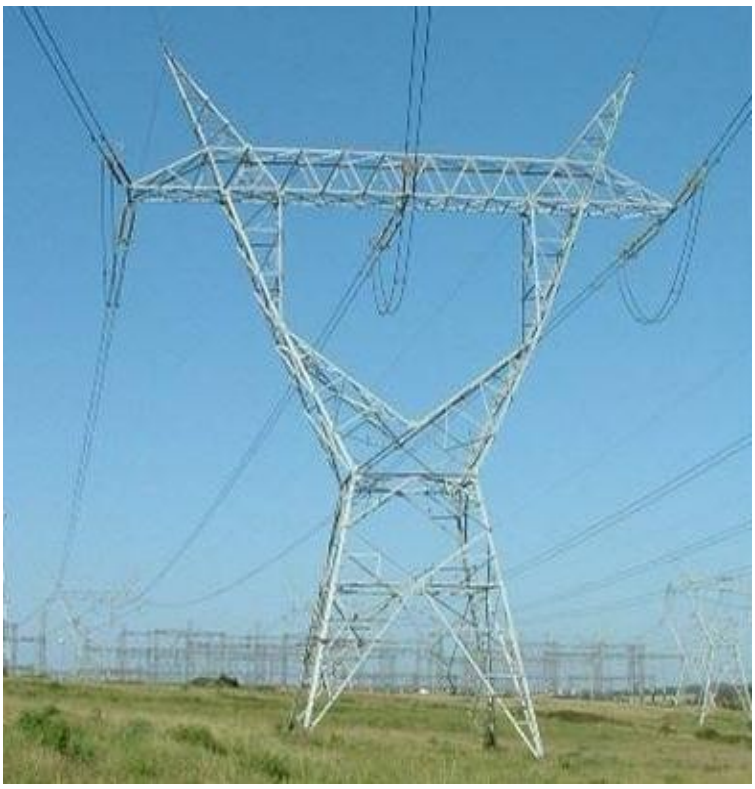

Figure 2: Self-supporting Tower

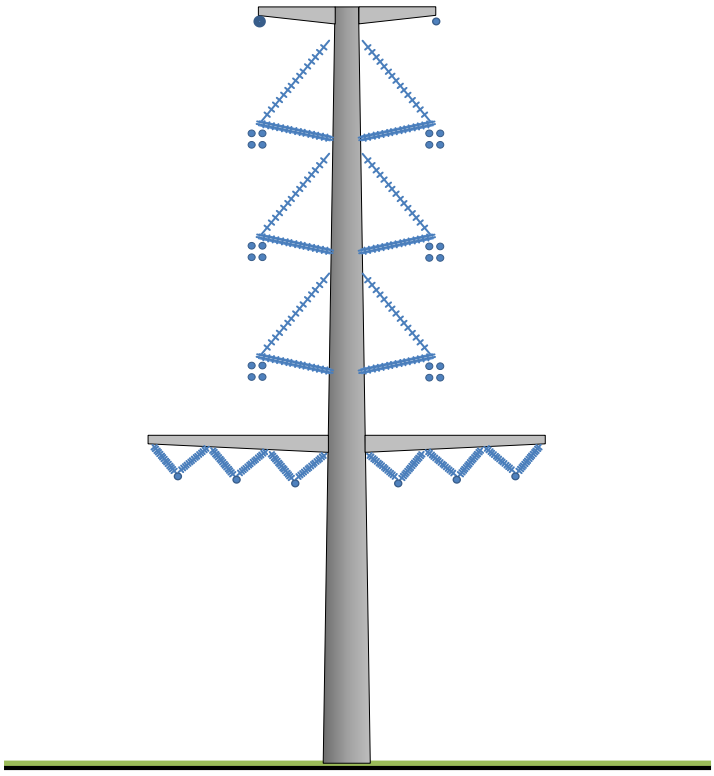

Figure 3: Braced Post Monopole

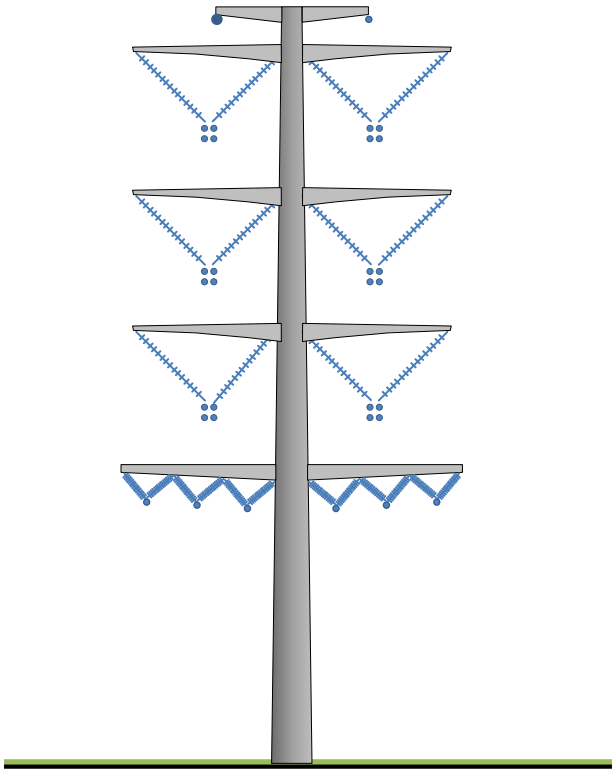

Figure 4: Conventional V-String Monopole

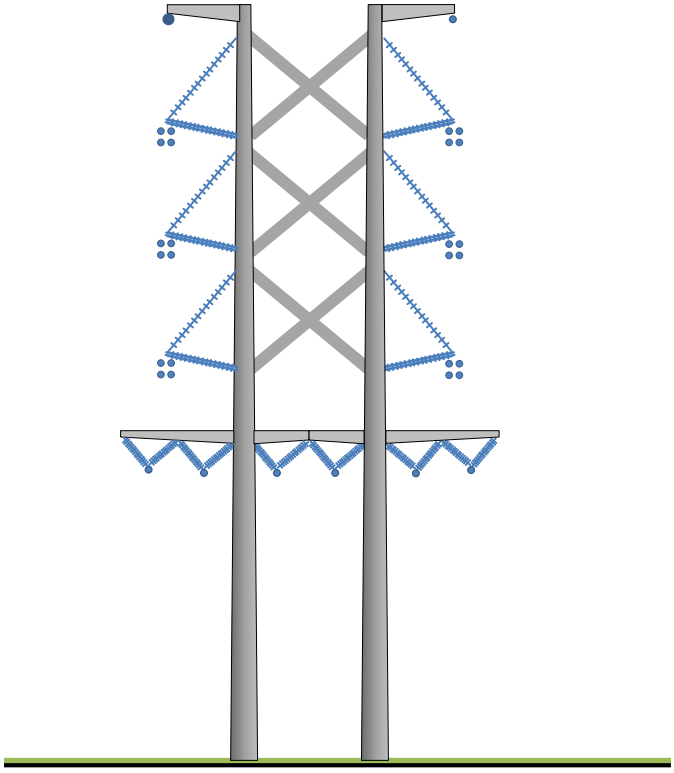

Figure 5: Braced Post Twin (Vertical) Pole

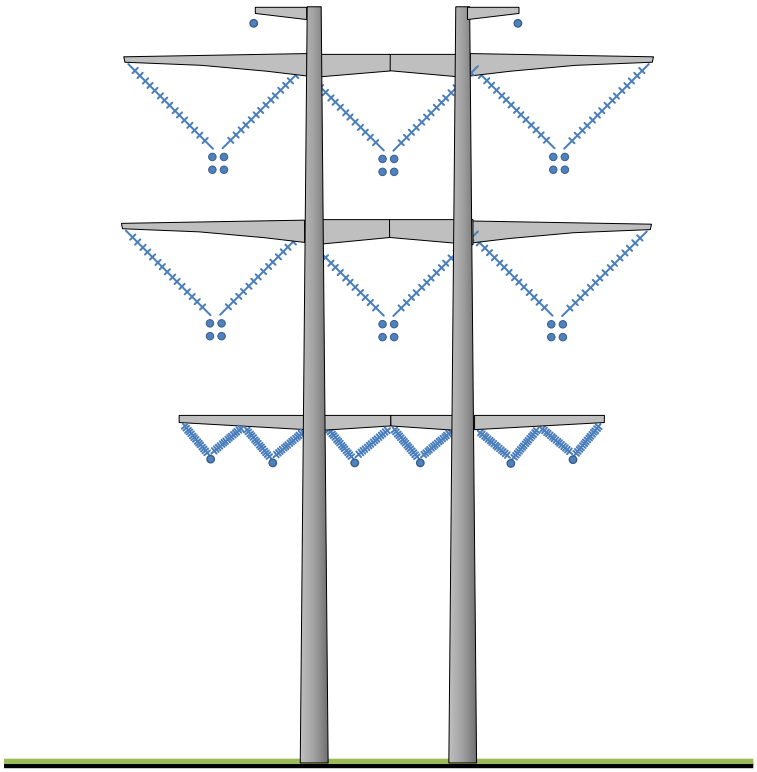

Figure 6: Twin (vertical) Pole with Flat Circuit Configuration

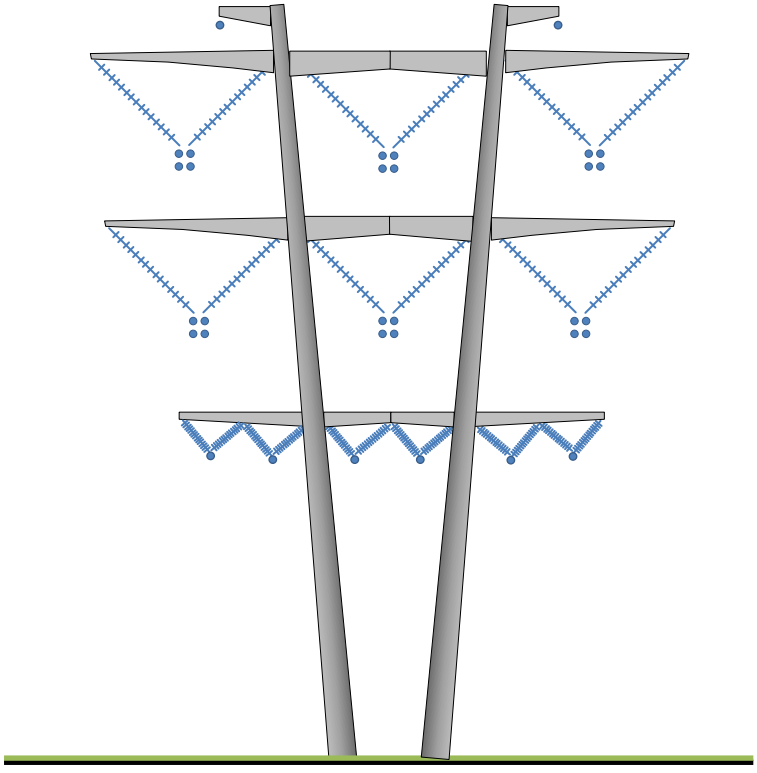

Figure 7: Twin (inclined) Pole with Flat Circuit Configuration

The types of pylon towers to be used along the preferred route alignment of the Transmission power line are determined based on the following criteria:

- Space available to construct and maintain the servitude for a 400kV Transmission power line.
- Horizontal distance between two pylon towers.

- The type of pylon towers adjacent to its horizontal axis.
- The angle created on its horizontal axis by the adjacent pylon towers.
- Cost of the Transmission power line (as shown in **Table 4**).

Table 4: Details of Pylon Tower Types

Pylon tower type	Servitude	Percentage [1]	Amount [2]
Self-supporting Tower	55m	100	R 650 000
Cross rope Supporting Tower	55m	200	R 1 300 000
Steel Mono Pole	55m	65	R 422 500
Guyed Vee	55m	50	R 325 000
Single Lattice Mast	55m	30	R195 000

[1] *The amounts are approximated and based on costs c 2009.*

[2] *The Self-supporting Tower is used as a base price. The costs of the other pylon towers are estimated as a percentage of the base price.*

2.7.3 Timing

Construction of the proposed Mitchell's Plain Substation will be undertaken over a maximum period of 12 months.

2.7.4 Access/Service Roads

Eskom requires access/service roads for the construction and maintenance phases. Access to the proposed Mitchell's Plain Substation area would be determined when the preferred location has been ascertained.

2.7.5 On-going Maintenance

The standard life-span of a Transmission substation and its associated components is approximately 25 years, which the Philippi Substation has exceeded. Continuous maintenance has been carried out (including the replacement of components), which significantly extends the life-span of the Transmission substation and its associated components beyond 25 years. Therefore, the proposed upgrade of the Philippi Substation will also assist in extending its lifespan.

2.7.6 Construction Camps

The Contractor's site camp shall be located within the development footprint (preferably at the proposed Mitchells Plain substation, or on a site appropriately zoned and/or authorised for such use and approved by the ECO.

The Contractor shall select a location that has easy access and which has already been cleared or disturbed by previous human activity (e.g. previous construction camps or stockpile areas). All construction activities, materials, equipment and personnel will be restricted to within the area specified. The site camp may not be located on any of the environmentally sensitive areas, such as nature reserves, Critical Biodiversity Areas or wetlands.

The various teams will travel from the construction camp to the construction site each day, which means that the teams may have to travel further to the site as they move along the alignment, if the site is situated in the middle of the preferred route alignment.

All materials are stored at the construction camp, with the exception of concrete and the steel towers (which may come direct from the factory).

Generally, in a rural area there is one construction camp per 100km of Transmission power line. Therefore, only one construction camp will be used for the construction of this proposed project and the Philippi-Mitchell's Plain project.

2.7.7 Project Construction Activities

The project requires the undertaking and completion of 27 construction actions (see Table 5) for the entire route of the new Transmission power lines. Activities will be done in steps so that, at any point, an observer will see a chain of events with different working teams involved. At any time, some or all of the different teams may be working at different points along the line. Construction of this line will take a maximum of 12 months to complete, and is anticipated to begin before the end of 2012.

Table 5: Project Activities

Activity	Approx Team Size	Approx Duration of Activity
Environmental Impact Assessment	15	18 months
Permitting and authorizations for project activities		
Servitude negotiations with the respective landowners		
Expropriation of necessary landowner portions		
Survey of the route	By air	-
Determination of the conductor type and selection of best-suited conductor, towers, insulators and foundations **Define final centre line** **Determine the co-ordinates of each bend in the line** **Undertake an aerial survey to obtain an accurate profile of the area** **Identify optimal tower sizes and positions**	-	-
Final design of power line and placement of towers	-	2-3 months
Issuing of tenders and award of contract to construction companies	-	3-6 months
Establishment of a site camp and the transportation of equipment, materials and personnel to site		
Vegetation clearance centre line (light vehicle access is required) **Clear shrubs and trees (as determined by the Environmental Management Plan) along the centre line, with the aid of a surveyor** **Undertake vegetation clearing in accordance with the minimum standards to be used for vegetation clearing for the construction of the proposed Transmission power lines**	5-15	1-2 days depending on local conditions
Centre line pegging and identification of requirements and locations for the new gate (light vehicle access required)	3	1 day

Activity	Approx Team Size	Approx Duration of Activity
Access negotiations (light vehicle access is required) ☐ Develop and agree on an access plan (Eskom, Contractor and landowners) ☐ Agree to rehabilitation process ☐ Take photographs of pre-construction conditions off-site ☐ Establish access roads (where required)	1	1 day
New gate installation (light vehicle access is required)	5	1 day
Vegetation clearance (tower positions) ☐ Clear four strips (40m × 40m square for Cross Rope Suspension (CRS) towers and 20m × 20m square for the self supporting towers) for assembly and erection at each marked tower position	5-15	1-2 days depending on local site conditions
Foundation nominations for main structure and anchors (heavy vehicle access is required) ☐ Check soil types to determine foundation requirements ☐ Dig trial pits at main foundation points (usually uses mechanical back-actor/auger methods, although manual labour may be used)	5	2 days
Excavation of foundations (heavy vehicle access is required) ☐ Excavate foundations of up to 4m × 4m square and up to 4m deep, depending on soil conditions (mechanically where access to tower sites is readily available, and by hand where access is poor) ☐ Cover or fence-off the foundation pit until foundation is poured.	15	2 days
Foundation steelwork – reinforcing (heavy vehicle access is required) ☐ Make up steelwork at base camp and transport it to site by truck ☐ Do fitting and wiring on site (limited welding on-site)	10	2 days
Foundation (concrete) pouring (heavy vehicle access is required) ☐ Shuttering ☐ Use of standard concrete truck ☐ Where there are access problems, mix concrete on site ☐ A 28-day period is required after concrete has been laid ☐ Heavy usage of access / service roads during this stage	20	2 days
Delivery of tower steelwork (heavy vehicle access; extra long trucks used) ☐ Deliver steelwork in sections and assemble on site ☐ Clearly mark access roads to ensure the correct tower is delivered to each site (towers are designed as unique for each location)	5	1 day
Assembly team / punching and painting (light vehicle access is required) ☐ Assemble steelwork on the ground ☐ Punch nuts and paint with non-corrosive paint	10	3 days

Activity	Approx Team Size	Approx Duration of Activity
Erection (abnormal-load-vehicle access is required) ▪ Final assembly of towers by cranes (minimum of 50 tons).	20	2 days
Stringing (abnormal load vehicle access required) ▪ Place cable drums within the servitude ▪ Undertake stringing in both directions (5-10km can be strung from one station) ▪ The working area at each drum will be as long as 130m, but will be within the servitude area ▪ Intensive vehicle activity within the working area is likely ▪ Pilot tractor will lay cable on the ground ▪ Pull up cable using a pulley ▪ Ensure conductors never touch the ground	50	7 days
Sag and tension (heavy vehicle access is required) ▪ Tension the line from each station to ensure minimum ground-clearance heights are achieved (8,4m for 400kV Transmission power lines)	10	3 days
Rehabilitation (heavy and light vehicle access is required) ▪ Continuous process throughout the construction phase ▪ Typically only commences after the first 100 towers are constructed, but in this instance, will commence after all the towers are constructed ▪ There is a one-year guarantee on the contractor's work, during which rehabilitation must be concluded	5-15	2-10 days depending on local site conditions
Signing off of all landowners		
Hand over of the Transmission power line from the Contractor to the Applicant		
Operation and maintenance of the Transmission power line by the Grid		

2.7.8 Project Footprint

The servitude width required to accommodate the towers on which the Transmission power line will be strung varies from 40m to 55m wide, depending on the type of pylon tower required. The servitude is required to ensure safe construction, maintenance and operation of the Transmission power line and Eskom will be entitled to unrestricted access.

2.8 Eskom Agricultural Policy

Eskom's Vegetation Management under Power Lines (Vosloo, 2009) has elements that relate agricultural activities under Transmission power lines, and is therefore applicable to this project. There is no specific guideline document that relates directly to the latter.

Agricultural activities are allowed to be practiced under Eskom Transmission power lines as long as the agricultural crops and equipment do not interfere with the power line

infrastructure. The minimum ground clearances and minimum safe distances to trees/structures according to the particular voltages are presented in Table 6.

Table 6: Safe Distance Specifications of Transmission Power Lines (Vosloo, 2009)

VOLTAGE	SERVITUDE WIDTH (M)	GROUND CLEARANCE (m)	SAFE DISTANCE TO TREES (m)
132Kv	31 to 36	6,3	3,8
220Kv	47	6,7	4,2
275Kv	47	7,2	4,7
400Kv	40 to 55	8,1	5,6
765Kv	80	10,4	8,5

The servitude width required to accommodate the towers on which the Transmission power line will be strung varies from 40m to 55m wide, depending on the type of pylon tower required. The servitude is required to ensure safe construction, maintenance and operation of the Transmission power line and Eskom will be entitled to unrestricted access.

Eskom will need to use existing access/service roads for the construction and maintenance of the Transmission power lines. However, where the former does not exist, the access/service road will be negotiated with the specific landowner.

2.9 Legal Framework

Section 24(C) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), as amended, indicates that the...

"Minister of Water and Environmental Affairs, or an organ of state with delegated powers, is the Competent Authority in the following circumstances and should be submitted to national DEA for review:

- *Implications for national environmental policy or international environmental commitments or relations.*
- *Takes place within an area where South Africa has international environmental obligations, such as international conventions, except for any area falling within the sea-shore, a conservancy, a protected natural environment, a proclaimed private nature reserve, a natural heritage site, or the buffer zone or transitional area of a biosphere reserve or a world heritage site.*
- *Affects an area that crosses either provincial or national boundaries.*
- *Is undertaken, or is to be undertaken, by:*
  - *A national department;*
  - *A provincial department responsible for environmental affairs;*
  - *A statutory body, excluding any municipality, which has been delegated the authority from either a national or provincial department to be responsible for a specific activity or set of activities; or*
  - *Will take place within a national proclaimed protected area or other conservation area under control of a national authority.*
- *When a need for arbitration due to issues specific with respect to a difference or disagreement regarding the protection of the environment in terms of the specific project is considered appropriate."*

Since the applicant (Eskom Holdings Ltd) is a parastatal, the application for a Scoping/EIA process has been submitted to the DEA as the approving authority. The Western Cape Provincial Department of Environmental Affairs and Development Planning (DEADP), the national Department of Water Affairs (DWA) and the Western Cape provincial conservation authority, and Cape Nature therefore act as commenting authorities in the EIA process.

2.10 National Environmental Management Act

The National Environmental Management Act, 1998 (Act No. 107 of 1998) [NEMA], as amended, provides a framework for the integration of the environmental management activities of various spheres of government. It promotes integrated management to ensure sustainable resource utilisation and development and requires that the DEA be the lead agent in ensuring effective custodianship of the environment. It also provides that sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where subjected to significant human resource usage and development pressure.

The NEMA principles emphasise the need to protect threatened ecosystems and are binding on all organs of state, including local authorities.

An application for development has to conform to the requirements of the NEMA and the regulations promulgated in terms of Section 24(1) thereof. The regulations promulgated under Section 24(1) are currently listed in GNR No. 385, GNR No. 386 and GNR No. 387 of 6 June 2006. All applications listed in the abovementioned regulations shall be subjected to a Scoping/EIA process and will require Environmental Authorisation from the DEA. Section 24(c) of the NEMA prohibits the undertaking of identified activities except by virtue of a competent authority.

Section 23 of NEMA further determines that Integrated Environmental Management should be employed when any policies, programmes, plans or projects are drawn up to minimise the impact on the environment. The duty of municipal officials to prevent pollution and ecological degradation, to promote conservation and secure ecologically sustainable development and use of natural resources, originates from the Constitution and the NEMA.

When the approving authority (DEA) is satisfied with the proposed development in terms of the NEMA and the EIA Regulations (2006), the relevant department issues Environmental Authorisation for the development. This Environmental Authorisation may include a list of conditions that must be complied with. These conditions must be strictly adhered to, as they are compiled specifically to ensure that adequate mitigating measures will be taken to minimise the negative effects of the development.

The conditions imposed by the Environmental Authorisation would generally include:

- measures to prevent, manage and mitigate environmental impacts to acceptable levels;
- prevention of pollution of water bodies and groundwater;
- a rehabilitation programme for disturbed natural and/or heritage areas;
- appointment of an independent Environmental Control Officer (ECO) to oversee the construction phase and to ensure that the development phase is conducted in an environmentally responsible manner;
- conservation management and visitor management plans; and
- requirements of other authorities, such as the DWA, the Department of Minerals and Energy and the SAHRA.

2.10.1 Activities Applicable to the National Environmental Management Act

The construction of the Firgrove-Mitchell's Plain 400kV double circuit Transmission power line, Mitchell's Plain substation and associated infrastructure falls within the ambit of the list of activities (see Table 7) identified in terms of sections 24(2)(a) and (d) of the NEMA.

Table 7: Listed Activities in terms of the NEMA

Number and date of the relevant notice	Activity no(s)	Description of each listed activity
Basic Assessment Process		
Section 24 (5) of the National Environmental Management Act, 2006, published under Government Notice No. R. 386, 21 April 2006	1(m)	The construction of facilities or infrastructure, including associated structures or infrastructure for any purpose in the one in ten year flood line of a river or stream, or within 32 metres from the bank of a river or stream where the flood line is unknown, excluding purposes associated with existing residential use, but including canals; channels; bridges; dams; and weirs.
	4	The dredging, excavation, infilling, removal or moving of soil, sand or rock exceeding 5 cubic metres from a river, tidal lagoon, tidal river, lake, in-stream dam, floodplain or wetland.
Section 24 (5) of the National Environmental Management Act, 2006, published under Government Notice No. R. 386, 21 April 2006	7	The above ground storage of a dangerous good, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 cubic metres but less than 1 000 cubic metres at any one location or site.
	12	The transformation or removal of indigenous vegetation of 3 hectares or more, or of any size where the transformation or removal would occur within a critically endangered or an endangered ecosystem listed in terms of Section 52 of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).
	14	The construction of masts of any material or type and of any height, including those used for telecommunication broadcasting and radio transmission, but excluding - (a) masts of 15 metres and lower exclusively used: (i) by radio amateurs; or (ii) for lighting purposes (b) flag poles; and (c) lightning conductor poles.
	15	The construction of a road that is wider than 4 metres or that has a reserve wider than 6 metres, excluding roads that fall within the ambit of another listed activity (e.g. national roads) or which are access roads of less than 30 metres long.
	16	The transformation of undeveloped, vacant or derelict land to (a) establish infill development covering an area of 5 hectares or more, but less than 20 hectares; or (b) residential, mixed, retail, commercial, industrial or institutional use where such development does not constitute infill and where the total area to be transformed is bigger than 1 hectare
	18	The subdivision of portions of land 9 hectares or larger into portions of 5 hectares or less.
	20	The transformation of an area zoned for use as public open space or for a conservation purpose to another use.
	25	The expansion of or changes to existing facilities for any process or activity, which requires an amendment of an existing permit or license or a new permit or license in terms of legislation governing the release of emissions, pollution, effluent.

Number and date of the relevant notice	Activity no(s)	Description of each listed activity
Scoping/EIA Process		
Section 24 (5) of the National Environmental Management Act, 2006, published under Government Notice No. R. 387, 21 April 2006	1(e)	The construction of facilities or infrastructure, including associated structures or infrastructure, for any process or activity which requires a permit or license in terms of legislation governing the generation or release of emissions, pollution, effluent or waste and which is not identified in Government Notice No. R. 386 of 2006
	1(l)	The construction of facilities or infrastructure, including associated structures or infrastructure, for the transmission and distribution of above ground electricity with a capacity of 120 kilovolts or more.
	2	Any development activity, including associated structures and infrastructure, where the total area of the developed area is, or is intended to be, 20 hectares or more.

Although the Basic Assessment process and Scoping / EIA process is applicable to the proposed development, it has been proposed that a Scoping / EIA process be undertaken. The proposed activity may not commence without Environmental Authorisation from the DEA.

2.10.2 Applicability of the EIA Regulations (2010)

The EIA Regulations (2010) were published in terms of the NEMA and came into effect on 2 August 2010. Sections 75 and 76 of the EIA Regulations (2010) state that an application submitted in terms of the EIA Regulations (2006), and which is pending when the EIA Regulations (2010) take effect, must despite the repeal of the former, be dispensed with in terms of the former as if they were not repealed. Therefore, the EIA Regulations (2010) are not applicable to this application.

In addition, if an activity that is listed under EIA Regulations (2006) does not form part of the EIA Regulations (2010), the DEA will consider the said activity to be withdrawn from the application. As such, the following activities of GNR No 386 of the EIA Regulations (2006) will no longer form part of this application, and will not be carried through to the EIA Phase:

18 The subdivision of portions of land 9 hectares or larger into portions of 5 hectares or less.

20 The transformation of an area zoned for use as public open space or for a conservation purpose to another use.

2.11 National Environmental Management: Waste Act

The National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM:WA) regulates waste management in order to protect human and environmental health by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development. It also provides for national norms and standards for regulating the management of waste by all spheres of government, providing for specific waste management measures to licensing and the control of waste management activities and remediation activities associated with contaminated land. This legislation provides for compliance and enforcement of the above requirements.

An application for development has to conform to the requirements of the NEM:WA and the regulations promulgated in terms of Section 19(1) thereof. The regulations promulgated under Section 19(1) are currently listed in GNR No. 718.

All activities listed in the abovementioned regulations shall be subject to a Basic Assessment Process for Category A activities, or an EIA Process for Category B activities, and will require a Waste Management License.

Section 20(b) of the NEM:WA prohibits the undertaking of identified waste management activities except by virtue of a licensing authority. A Waste Management License is managed and authorised by the Waste Management Department within the DEA. As such, one integrated EIA Process is undertaken, as prescribed by the NEM:WA, which will also include the waste management activities.

2.11.1 Activities Applicable to the National Environmental Management: Waste Act

The construction of the power lines could lead to the relocation of settlements, resulting in the demolition of building structures. This would create building rubble that may require temporary onsite storage of waste. This waste-generating activity could fall within the ambit of the listed activity in Table 8 identified in terms of Section 20 (b) of the NEM:WA.

Table 8: Listed activities in terms of the NEM: Waste Act

NUMBER AND DATE OF THE RELEVANT NOTICE	ACTIVITY NO(S)	DESCRIPTION OF EACH LISTED ACTIVITY
National Environmental Management: Waste Act (59/2008): List of waste management activities that have, or are likely to have a detrimental effect on the environment, published under Government Notice 718 of 3 July 2008.	Category A (3) (1)	The storage, including the temporary storage, of general waste at a facility that has the capacity to store in excess of 100m^3 of general waste at any one time, excluding the storage of waste in lagoons.

The Waste Management Licence will only be required if the building rubble will amount to more than 100m^3 and if it is stored in one area for more than 90 days.

2.12 National Water Act

The National Water Act, 1998 (Act No. 36 of 1998) (NWA) states that water from a water resource may be used by any person for reasonable domestic use; continue using with an existing water use or may use such water in terms of a general authorisation or licence issued in terms of the Act. Such water use is broadly defined and for the purposes of this report, includes the altering of a watercourse, waste discharges and disposals and the removal of water found underground for certain purposes.

The NWA provides for tiered regulatory control over 11 water uses as identified in Section 21 of the NWA. After providing for the Ecological Reserve and international obligations, the basis for granting authorisation to use the available water quantity and/or quality in an area will be the achievement of beneficial use in the public interest. This is also referred to as optimum use, i.e. use which achieves the most desirable combination of social, economic and environmental objectives, irrespective of whether such use is consumptive or non-consumptive. This includes the erection of towers and related construction activities within riverine and wetland environments.

Thus, a person who wishes to use or who uses water in a manner that is not covered under Schedule 1, General Authorisations, or in a manner that is not regarded or declared as an existing lawful use, may only use that water under the authority of a Water Use Licence. Therefore, the use of water for power generation by Eskom must be motivated and justified.

The General Authorisations replaces the need for a water user to apply for a licence in terms of the NWA for the identified water uses provided that the water use is within the limits and conditions in the General Authorisation. These General Authorisations are catchment and water-use specific and should be dealt with on a case-by-case basis.

The Act also provides for pollution prevention measures with particular emphasis on water resource pollution. In accordance, the licensee shall ensure his activities impacting upon water resources and effluent releases are monitored for compliance with the applicable regulations. Emergency incidents involving water resources are included in the Act, requiring the polluter to remediate and mitigate the impacts of such an emergency incident.

2.12.1 Water Use Licence Application Process

The Generic Licensing Process highlights seven stages of a Water Use Licence Application. It is a phased approach, which is essential to consider and follow ensuring that an applicant for a water use licence is assured of the correct process to follow, determines the validity of the application, and the level of detail required for motivation of the water use. Without the phased approach, the applicant runs the risk of expending unnecessary time and effort on aspects not required, or worse, certain critical aspects are missed.

a) Application

Pre-application liaison should take place with the relevant departmental officials and a lead regional office and officer should be identified (in this instance, the Western Cape Regional Offices). Furthermore, the initial formal water use licence application forms must be completed and payment of R114.00 must be paid to the regional offices to initiate the tracking process for the application.

b) Validation

During the initial contact with the regional offices and after submitting the formal water use licence application forms the validity of the application against legal requirements, determining the type of water use authorisation, and checking of completeness of information provided are also undertaken and confirmed.

c) Pre-position Information

During this stage, an evaluation is made of the available information and whether this information is sufficient to support the motivation and justification of the water uses applied for.

The above phases are normally captured in an Initial Assessment Report that is submitted to the DWA. The applicant only continues with the next phases after confirmation is received from the DWA.

Based on the feedback from the DWA, a final Integrated Water Use Licence Application can be submitted, incorporating the results of detailed investigations of the potential

impacts that the proposed water use could have on the water resources, including Section 27 requirements. If they have changed, the revised formal water use licence application forms should be re-submitted.

2.12.2 Section 27(1) Requirements

The NWA includes considerations set out in section 27(1) that must be applied in the assessment of licence applications for water use. Although the Act states that this is the DWA's responsibility, the applicant should at least supply the "minimum" information required in terms of section 27(1) to allow the Department to evaluate the application.

2.12.3 Technical Information in Support of Integrated Water Use Licence Application

To enable the DWA to prepare a water use licence, specific water-use details are required. This information should be captured in the formal water-use licence application forms and elaborated on in the initial assessment and final reports. Information such as title deed numbers on which the water use takes place, water abstraction points (co-ordinates), water discharge points (co-ordinates), volume of water abstracted per day as an average and a peak quantity on any day, and water quality of the final effluent to be discharged.

Not only should the consumptive use of water be described, but the general management of stormwater, storage of raw materials, disposal of waste material from the construction site and drilling liquid should be described. Best practice should be used as a norm for these management measures.

2.12.4 Activities Applicable to the NWA

Construction-related activities will impact upon water resources, thereby requiring a licence for such activities in accordance with Section 21 of the NWA. The listed activity in terms of the NWA is shown in Table 9.

Table 9: Listed activities in terms of the NWA

Number and Date of the Relevant Notice	Activity No(s)	Description of Each Listed Activity
General Authorisations In Terms Of Section 39 Of The National Water Act, under Government Notice 26187 of 26 march 2004.	21 (c)	Impeding or diverting the flow of water in a watercourse.
	21 (f)	Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit.
	21 (i)	Altering the bed, banks, course or characteristics of a watercourse.
	21 (j)	Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people.

2.13 National Heritage Resources Act

The National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) directs the protection and management of the heritage resources in South Africa. This legislation serves as guidelines to the heritage resource management authorities in South Africa, according to which developers and other authorities must exercise discretion or take decisions in terms of this Act. The NHRA applies to the actions of the State, local authorities and private individuals.

National Estate includes, but is not limited to, places, buildings, structures and equipment of cultural significance, places to which oral traditions are attached or which are

associated with living heritage; historical settlements and townscapes, landscapes and natural features of cultural significance, geological sites of scientific or cultural importance, archaeological and paleontological sites, graves and burial grounds, sites of significance relating to the history of slavery in South Africa and movable objects.

A variety of formal protection measures, ranging from national and provincial heritage sites, protected areas, provisional protection, inclusion on the heritage register of a province, heritage areas and heritage objects have been included in the NHRA. A number of other protection measures, including the legal protection of paleontological and archaeological sites (including rock art) and meteorites, burial grounds and graves, structures older than 60 years and public monuments and memorials are also in place.

Applicants must contact the South African Heritage Resource Agency (SAHRA) to ascertain which properties and objects are formally protected by the Act and how any future development would impact on these heritage resources. Applicants should note that formal permit applications or authorisations would be required from the relevant heritage resource management authority to make changes to these heritage resources.

Applicants must note that the provisions of Section 38 of the NHRA provide that they are responsible for contacting the SAHRA at the very earliest stages of initiating a development and for furnishing the SAHRA with details relating to the proposed development in order for the SAHRA to determine if a Heritage Impact Assessment (HIA) is required.

2.14 Hazardous Substances Act

The Hazardous Substances Act, 1973 (Act 15 of 1973) provides for the control of substances which may cause injury or ill-health or death of humans by reason of their toxic, corrosive, irritant, strongly sensitising or flammable nature or the generation of pressure in certain circumstances, and for the control of certain electronic products. The Hazardous Substance Act further provides for the division of such substances or products into groups in relation to their degree of danger. The Act also provides for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances and products.

2.15 Other Applicable Environmental Legislation

A limited scoping of relevant legislation was undertaken to identify the key legal issues related to the proposed project. Applicable key environmental legislation, which must be considered by Eskom Holdings Limited during the implementation of the proposed project is summarised in Table 10.

Table 10: List of Applicable Legislation and Guidelines

LEGISLATION	SECTIONS	RELATES TO:
The Constitution Act (No 108 of 1996)	Chapter 2	Bill of Rights
	Section 24	Environmental rights
	Section 25	Rights in property
	Section 32	Administrative justice
	Section 33	Access to information
National Environmental Management Act (No 107 of 1998) as amended[2]	Section 2	Defines the strategic environmental management goals, principles and objectives of the government. Applies throughout the Republic to the actions of all organs of state that may significantly affect the environment
	Section 24	Provides for the prohibition, restriction and control of activities that are likely to have a detrimental effect on the environment.
	Section 28	Duty of care and remediation of environmental damage. The scheme owner has a general duty to care for the environment and to institute such measures as may be needed to demonstrate such care. The duty of care has been amended to include significant pollution or degradation that occurred before the commencement of the NEMA that arises or is likely to arise at a different time from the actual activity that caused the contamination or that arises through an act or activity of a person that results in a change to pre-existing contamination.
	Section 30	Control of emergency incidents. Responsible person's duties relating to reporting and remediation actions regarding emergency incidents. A criminal sanction may be imposed on the responsible person for failure to comply with the reporting requirements and obligations to address any emergency incidents.
Environment Conservation Act (Act 73 of 1989) and regulations	The Act has been substantially repealed by the NEMA. However, there are certain regulations under the Act which are still in operation, such as the National Noise Control Regulations.	
National Environmental Management: Protected Areas Act (No 57 of 2003)	The Act came into operation on 1 November 2004. The aim of the Act is to provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity, natural landscapes and seascapes. In 2004, the National Environmental Management: Protected Areas Amendment Act 31 of 2004 was promulgated to amend Act 57 of 2003 with regard to the application of that Act to national parks and marine protected areas. The NEM: Protected Areas Amendment Act was published for public information on 11 February 2005 and came into operation on 01 November 2005. The NEM: Protected Areas Act, as amended by the NEM: Protected Areas Act 31 of 2004 repeals sections 16, 17 & 18 of the ECA as well as the National Parks Act with the exception of section 2(1) and Schedule 1.	
National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) (NEMBA)	Sections 65-69	These sections deal with restricted activities involving alien species; restricted activities involving certain alien species totally prohibited; and duty of care relating to alien species.
	Sections 71 and 73	These sections deal with restricted activities involving listed invasive species and duty of care relating to listed invasive species.
Conservation of Agricultural Resources Act (No 43 of 1983) and regulations	Section 5, 6	Implementation of control measures for alien and invasive plant species

2 The EIA Regulations (2010) R543, R544, R545 and R546 may be relevant for certain construction and maintenance activities, such as those that may need to take place in or close to water resources.

LEGISLATION	SECTIONS	RELATES TO:
National Water Act (No 36 of 1998) and regulations	Section 19	Prevention and remedying the effects of pollution
	Section 20	Control of emergency incidents
	Section 21	DWA will require water use licences for various construction-related activities.
	Section 26 and 34	Registration of water use regarding the discharging of waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit and disposing of waste in a manner that may detrimentally impact on a water resource.
National Heritage Resources Act (No 25 of 1999)	Section 35	No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site.
	Section 36	No person may, without a permit issued by the South African Heritage Resource Agency (SAHRA) or a provincial heritage resources authority destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority. "Grave" is widely defined in the Act to include the contents, headstone or other marker of such a place, and any other structure on or associated with such a place.
	Section 38	This section provides for Heritage Impact Assessments (HIA), which are not covered under the ECA. The HIA will be approved by the DEA, which is required to take SAHRA's comments into account prior to making a decision on the HIA.
Removal of Graves and Dead Bodies Ordinance 7 of 1925	Authorisation for exhumation and re-internment of human remains must be obtained from the relevant local authority where the grave is situated, as well as where the grave is being relocated to.	
National Environmental Management: Air Quality Act (No 39 of 2004)	Section 32	Control of dust
	Section 34	Control of noise
	Section 35	Control of offensive odours
	Chapter 5	Licensing of listed activities
	Schedule 2	Ambient air quality standards
National Environmental Management: Waste Act (No. 59 of 2008)	Section 16	General duty in terms of waste management
	Section 17	Reduction, re-use, recycling and recovery of waste
	Section 20	No person may commence, undertake or conduct a waste management activity, except in accordance with: • the requirements or standards prescribed by said Act and regulations; and • a waste management licence issued in respect of that activity, if a licence is required.
	Section 26	Prohibition of unauthorised disposal of waste
	Section 27	Littering
Minimum requirements for storage, handling and disposal of hazardous waste, DWAF guidelines, 1998	Section 10	Temporary hazardous waste storage: time, volume and other requirements

LEGISLATION	SECTIONS	RELATES TO:
South African National Roads Agency Limited and National Roads Act, 1998 (Act No. 7 of 1998): **1. Damaging of a National Road**	Section 46(3)	The owners or occupiers of land adjoining any national road must: • take all measures on their land that are reasonably necessary to prevent the occurrence of any damage to the national road concerned. • Refrain from doing or permitting anything on or below the surface of that land which is likely to cause damage to that national road.
	Section 46(4)	The owner or occupier of any land adjoining a national road will be held liable for any damage to the national road which was or reasonably should have been foreseen.
	Section 5(a) and (b)	The Agency may issue a written notice demanding that the owner or occupier prevents or stops any activity that may cause damage to a national road. The demand may include, among others, the removal, filling in, alteration, relocation or establishment of any dam, canal, trench, wall, sluice, pipe, excavation, structure or other works, or the cessation of such an act, on the land.
South African National Roads Agency Limited and National Roads Act, 1998 (Act No. 7 of 1998): **3. Structures and other works on, over or below national roads or certain other land**	Section 48(1)	No person may do any of the following without the Agency's permission: • On or over, or below the surface of, a national road erect, construct or lay, or establish any structure. • Make any structural alteration or addition to a structure situated on or over, or below the surface of a national road. • Give permission for either (a) or (b).
	Section 48(5)	The Agency may give written notice for the removal of any such structure, or may remove the structure and recover the costs from that person.
	Section 48(8)	Any person who contravenes this section is guilty of an offence and liable to one year in prison and/or a fine.
Explosives Act (Act 15 of 2003) and regulations	Provisions for the control of explosives in terms of use, disposal, storage, transportation, dealing, importation, exportation and packaging of explosives.	
Occupational Health and Safety Act (No 85 of 1993) and regulations	General Administration Regulations GN R1449 (Section 7)	Material Safety Data Sheets must be made available at the request of any interested or affected party.
	Section 8	General duties of employers to their employees
	Section 9	General duties of employers and self-employed persons to persons other than their employees
Fencing Act (No 31 of 1963)	Section 17	Any person erecting a boundary fence may clean any bush along the line of the fence up to 1.5 metres on each side thereof and remove any tree standing in the immediate line of the fence. However, this provision must be read in conjunction with the environmental legal provisions relevant to the protection of flora.
Hazardous Substances Act (No 15 of 1973) and regulations	Provides for the definition, classification, use, operation, modification, disposal or dumping of hazardous substances	
Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (No 36 of 1947) and regulations	Sections 3-10	Control of the use of registered pesticides, herbicides (weed killers) and fertilisers. Special precautions must be taken to prevent workers from being exposed to chemical substances in this regard. Workers handling these remedies must also be registered in terms of the Act.
National Road Traffic Act (No 93 of 1996) and regulations	Section 54	Transportation of dangerous goods

LEGISLATION	SECTIONS	RELATES TO:
National Veld and Forest Fire Act (No 101 of 1998)	Chapter 2	Promotes and regulates the formation of fire protection associations which aim to manage and coordinate fire protection and fire services in an area.
	Chapters 4 & 5	Organisations are required to make and maintain firebreaks and fire-fighting equipment and personnel should a risk exist that a fire may start or spread from the premises.
Subdivision of Agricultural Land Act (Act 70 of 1970)	To control the subdivision and, in connection therewith, the use of agricultural land.	
SANS 1929	Ambient air quality – limits for common pollutants3	
SANS 10103	The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication.	
SANS 10128	Bunding of fuel storage tanks	

2.16 Applicable By-Laws

The CoCT by-laws that may be applicable to the proposed development are listed in Table 11.

Table 11: Applicable By-laws

CoCT BY-LAWS	SECTION	RELATES TO
CoCT Air Pollution Control By-law, GG5979, LA 12649, 4 February 2003	Duty of Care	This section calls upon everybody to exercise duty of care to prevent air pollution from occurring. Pollution must be mitigated to remedy air pollution. Failure to do this may empower the Council to take serious actions against that person.
	Declaration of Air Pollution Control Zone	The whole area within the jurisdiction of the Council is declared an air pollution control zone. The Council has power within the control zone to issue notices in the provincial gazette to prohibit and restrict activities that may pollute air.
	Smoke emissions from premises other than dwellings	Dark smoke may not be emitted for an aggregate period exceeding three minutes during a continuous period of 30 minutes. Installation, alteration, extension or replacing of fuel burning equipment must be authorised by the Council. Operation of fuel burning equipment without the Council's authorisation is an offence. The owner or occupier of premises may be required to install at own costs, the obscuration measuring equipment. Records and monitoring results must be kept and maintained.
	Emissions caused by open burning	Open burning of any material without a written authorisation from the Council is an offence.
	Emissions from compressed ignition powered vehicles	Vehicles using compressed ignition power and emitting dark smoke may not be used.
	Emissions that cause a nuisance	Emissions that cause a nuisance are an offence. An abatement notice may be served on any person who is or is likely to cause air pollution to abate the nuisance, prevent it and comply with conditions set in the notice.

3 Replaced by R1210

CoCT BY-LAWS	SECTION	RELATES TO
CoCT Water By-law, Gazette No. 6378, 1 September 2006	Section 10	**Duties of the public** All members of the public, upon becoming aware of any emergency or situation that may give rise to wastage of water or water pollution must, immediately inform the Director: Water.
	Section 14	**Offences and penalties** Any person who contravenes or fails to comply with any provision of these by-laws will be guilty of an offence and may be liable, upon conviction, for a fine.
	Section 18	**Unauthorised use of water** No person may use water from the water supply system without an agreement with the municipality and only through a communication pipe and metered water supply point installed by the municipality.
	Section 42	**Wastage of water** No person may cause or permit the wastage of water such as permitting leaking pipes or insufficient use of water.
	Section 43	**Water conservation and demand management** All consumers of water must comply with good water conservation and demand management practices.
	Section 59	**Prevention of pollution of water** An occupier of premises must prevent the entry of any substance which may be a danger to health or adversely affect the potability of water into the water supply system or any part of the water installation on his/her property.
	Section 62	**Wells, wellpoints, boreholes and excavations** An owner of premises on which there is a well, wellpoint, borehole or any other excavation must ensure that it does not create a health nuisance or is filled in a way or with material which may cause an adjacent well, borehole or underground source of water to become polluted.
	Section 64	**Supply of non-potable water by the municipality** Non-potable water supplied by the municipality may not be used for domestic purposes or any other purpose which may give rise to a health hazard.
	Section 66	**Warning notices** Sources of non-potable water must be clearly marked with a weatherproof notice.
Fire Safety By-Laws, 28 February 2002	Section 26	Combustible waste and refuse
	Section 34	Combustible material fire hazards
	Section 37	Storage and use of flammables
	Section 48	Reporting of accidents

CoCT BY-LAWS	SECTION	RELATES TO
CoCT Environmental Health By-Laws, LA13333, 30 June 2003		• Land open to the public may not be used for the purpose of storing and stacking or for keeping any material likely to cause a health nuisance. • No premises may be allowed to be overgrown with bush, weeds or grass to such an extent that it may be used as a shelter by vagrants, wild animals or vermin which may threaten public health or safety. • The sanitation system on any premises may not be of such nature or condition that it may cause a health nuisance. • No person may commit any act which may cause a public health nuisance. • No person shall occupy any premises for habitable purposes so as to be a health nuisance. • No factory or trade premises may cause or give rise to smells that will cause a health nuisance. • The occupier of premises must take all possible measures to prevent the occurrence of mosquitoes, flies, fleas, bugs, cockroaches or other vermin or pests. • Filth, rubbish, refuse, manure or any material likely to be a health nuisance may not be kept or deposited on any premises. • Any person who fails to comply with or contravenes any provision of Section 1 of these by-laws will be guilty of an offence and may be liable to a fine. • Medical waste must be handled and stored in a safe manner that poses no threat to human health or the environment. • Any person convicted of an offence under these by-laws shall be liable to a penalty.
CoCT Stormwater Management By-Laws , LA 31420, 23 September 2005	Prohibited discharges	No person may discharge anything but stormwater into the storm water system without written consent from the Council.
	Protection of storm water system	No person may commit any act which may damage, endanger or destroy the stormwater system or interfere with the operation thereof or contaminate or pollute the water therein without written consent from the Council.
	Prevention of flood risk	No person may undertake any activity which may cause an increase in flood levels or create a potential flood risk without written consent from the Council.
	Studies and assessments	The Council may require that an environmental impact study may be done for any listed activity.
	Water pollution incidents	Should a stormwater pollution incident occur, the owner of the property on which the incident took place or the person responsible for the incident must inform the Council of the incident immediately and take all reasonable measures to minimise the effects of the pollution.
	Storm water systems on private land	No owner of property on which a private stormwater system is located may carry out an activity which may cause the system not to function properly. The owner must also keep such stormwater system functioning properly.
	Offences and penalties	Any person who contravenes or fails to comply with any provision of these by-laws will be guilty of an offence and may be liable, upon conviction, to a penalty.
CoCT Public Places and Nuisances By-Laws	Section 2	**Prohibited behaviour** No person may intentionally block or interfere with the safe and free passage of a pedestrian or vehicle.

CoCT BY-LAWS	SECTION	RELATES TO
	Section 6	**Trees causing an interference or obstruction** The City may give notice to the owner or occupier of any property on which a tree or other growth which interferes with overhead wires or is a source of danger or nuisance to persons using a public road to prune or remove the tree or growth.
	Section 8	**Goods, building materials, motor vehicle wrecks and dangerous objects** No person may cause any broken glass or other potentially dangerous objects to be placed in a public place.
	Section 23	**Offences and penalties** Any person who contravenes or fails to comply with any provision of these by-laws will be guilty of an offence and may be liable, upon conviction, to a fine.
CoCT Wastewater and Industrial Effluent By-Laws GN 6378, 1 September 2006	Section 2	**Duties of owners of properties** Owners of premises must construct their own private sewer installations on their premises.
	Section 3	**Protection of municipal sewers** No person may interfere with the municipal sewer system in any way or discharge into the system any substance other than sewage without the approval of the council.
CoCT Integrated Waste Management By-Law, 2009	Section 4	**Obligations of Waste Generators** A waste generator must: • "avoid the generation of waste or where it cannot be avoided minimise the toxicity and amounts of waste generated"; • "re-use, recycle or recover waste where possible"; • "manage waste so that it does not endanger health or the environment or create a nuisance"; • "maintain suitable cleanliness and hygiene standards on their premises as required by the City's Environmental Health By-law"; • "conclude a contract with the City, its service provider or an accredited service provider, as the case may be, for the storage and collection of waste". A waste generator generating industrial waste shall submit an integrated waste management plan to the City and comply with the terms and conditions set out by the City for the generation, minimisation, storage, recycling, collection and disposal of such waste. Any person who directly or indirectly generates building waste or the owner of the property on which such building waste is generated shall not store such waste in containers provided by the City for residential waste and shall remove and dispose of it at a licensed crushing plant or landfill site or any other licensed building waste disposal facility. The waste generator or the owner of the property on which waste is generated who deposits or stores waste on property of the City may be fined for failure to have or produce a permit for such deposit or storage.
	Section 7	**Priority Waste** Where special measures are required for management of waste because it poses a significant threat to health or the environment, it is not biodegradable, contains or could foster pathogens or communicable diseases or has been declared a priority waste in terms of other applicable legislation it can be prioritised according to this By-law.

CoCT BY-LAWS	SECTION	RELATES TO
	Section 12	**Storage and Transportation of Waste** Any person who stores or transports waste must ensure that: • "suitable measures are in place to prevent accidental spillage or leakage"; • "the waste cannot be blown away"; • "nuisances such as odour, visual impacts do not arise"; and • "pollution of the environment and harm to health are prevented".
		Prohibition of Unauthorised Disposal of Waste No person may: • Dispose of waste in a manner likely to cause pollution or have a negative impact on the environment or to be harmful to health; • Dispose of waste other than in accordance with this By-law or National and Provincial legislation; • Burn waste, especially hazardous waste except in approved incinerators; • Deal with waste in a manner that causes dust, spillage or litter.

2.17 Potential Authorisations / Permits / Licences Required Prior to Project Commencement

Table 12 provides information on additional activities which may require authorisations / permits / licences from relevant government departments. The Contractor is to ensure that prior to the commencement of works, these authorisations / permits / licences have been obtained.

Table 12: Activities that could require an authorisation / permit / licence

Activity	Type of authorisation / permit/ license required	Requiring institution
Use of treated wastewater (dust suppression)	Approval	DOH
Application for a licence regarding activities in state forest	Licence	DWA
Search and Rescue	Permit	CapeNature
Veld and Forest Fire	Requirement for a fire management plan	NV&FFA
Archaeological and paleontological sites and meteorites	Permit	Heritage Western Cape
To destroy, damage, deface, alter, remove from its original position, subdivide or change the planning status of a National Heritage Site	Permit	Heritage Western Cape
Burial grounds and graves	Permit	Heritage Western Cape
Way leave applications for accesses to the provincial roads	Approval	DOT
Health permits for hostels and sanitation	Permit	DOH

Activity	Type of authorisation / permit/ license required	Requiring institution
Blasting	Permit	SAPS
Commencement of Construction Activities	Notify one week before commencement	DEA
Radio Equipment Licence	Site radio submission	ICASA
Outdoor advertising of Activities	South African Manual for Outdoor Advertising Control	SAMOAC
Site Establishment Sewage Disposal	Approval	CoCT
Site Establishment stormwater & pollution control	Separate report	CoCT
Fuel storage	Permit	DEA/ CoCT
Hazardous material route	Approval	DEA/DOT
Other Hazardous substances	Permit	DEA
Project commencement	Notify	DOL
Land use outside current	Special consent approval (LUPO)	CoCT
Detail design (water, wastewater, roads design)	Approval	CoCT
Way leave applications – design	Approval	SANRAL

3 BACKGROUND TO THE ENVIRONMENTAL MANAGEMENT PLAN

3.1 Nature of the EMP

The EMP is a legally required document in the same manner as a licence or EA is required prior to undertaking an activity. The document is Eskom's response to ensure that it complies with the requirements of reasonable protection of the environment as imposed by Section 28 of NEMA in particular, which refers to duty of care. The EIA Regulations, 2010, are used as a guideline for the content of the EMP and in terms of Sec 24N (Environmental Management Plan), an EMP must include:

(a) details of

(i) the person who prepared the Environmental Management Plan; and

(ii) the expertise of that person to prepare an Environmental Management Plan;

(b) information on any proposed management or mitigation measures that will be taken to address the environmental impacts that have been identified in a report contemplated by these Regulations, including environmental impacts or objectives in respect of-

(i) planning and design;

(ii) pre-construction and construction activities;

(iii) operation or undertaking of the activity;

(iv) rehabilitation of the environment; and

(v) closure, where relevant.

(c) a detailed description of the aspects of the activity that are covered by the draft Environmental Management Plan;

(d) an identification of the persons who will be responsible for the implementation of the measures contemplated in paragraph (b);

(e) proposed mechanisms for monitoring compliance with and performance assessment against the Environmental Management Plan and reporting thereon;

(f) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development, including, where appropriate, concurrent or progressive rehabilitation measures;

(g) a description of the manner in which it intends to-

(i) modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;

(ii) remedy the cause of pollution or degradation and migration of pollutants;

(iii) comply with any prescribed environmental management standards or practices;

(iv) comply with any applicable provisions of the Act regarding closure, where applicable;

(v) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;

(h) time periods within which the measures contemplated in the Environmental Management Plan must be implemented;

(i) the process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of undertaking a listed activity;

(j) an environmental awareness plan describing the manner in which-

(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and

(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment;

(k) where appropriate, closure plans, including closure objectives.

The mitigation measures required in terms of Section 28, subsection (1) may include measures to –

- investigate, assess and evaluate the impact on the environment;
- inform and educate employees about the environmental risks of their work and the manner in which their tasks must be performed to avoid causing significant pollution or degradation of the environment;
- cease, modify or control any act, activity or process causing the pollution or degradation;
- contain or prevent the movement of pollutants or the cause of degradation;
- eliminate any source of the pollution or degradation; or
- remedy the effects of the pollution or degradation.

This EMP, as a standalone document, shall be used to guide and regulate environmental performance of the project through the construction and rehabilitation stages of the scheme. It contains the following elements:

- goal setting and performance measurement;
- compliance management;

- an assessment and management system;
- community relations;
- roles, responsibilities and accountabilities;
- risk management;
- emergency preparedness and response; and
- incident reporting and investigation.

To achieve these environmental management requirements, a defined and implementable system must be in place. This system comprises the what and the how.

1. **The what**: The EMP indicates to the Applicant what is required by setting objectives with measurable targets in place for the successful management of the scheme.
2. **The how**: The Applicant is required to formulate procedures and/or guideline documents in compliance with its Quality Management System (QMS) requirements on how the objectives will be met.

3.2 Objectives of the EMP

The main objective of the EMP is to ensure the implementation of environmental practices that are aimed at the best form of environmental protection. The aim is to ensure that the Applicant takes reasonable measures to protect the environment and to remedy impacts to the environment, as required by the Duty of Care introduced by the NEMA, Section 28. The EMP draws the Applicant's attention to the monitoring, auditing and corrective actions needed during construction of the Transmission power line. Therefore, the other objectives4 of the EMP are to:

- avoid, minimise or correct the disturbance of ecosystems and loss of biodiversity;
- avoid, minimise or correct pollution and degradation of the environment;
- avoid or minimise waste, to reuse or recycle waste where possible and to dispose of waste in a responsible manner;
- apply a risk-averse and cautious approach; and
- anticipate and prevent negative impacts on the environment and on people's environmental rights. Where impacts cannot be prevented, such impacts must be minimised and mitigated.

3.3 Scope of the EMP

The EMP outlines the impacts and mitigation measures associated with the planning and design, pre-construction and construction, operation, rehabilitation and closure (or decommissioning) of the Transmission power line. The roles, responsibilities and reporting procedures have been identified in the EMP.

The EMP also contains a series of environmental specifications designed to avoid, minimise and, ultimately, manage the potential environmental impacts associated with the construction of the affected Transmission power line.

The EMP is for the planning and design, pre-construction and construction, operation, rehabilitation and closure (or decommissioning) activities associated with the Transmission power line.

[4] As defined by the National Environmental Management Act (No. 107 of 1998).

3.4 The Continuous Improvement Approach

The approach adopted for this EMP is derived from the **Deming Cycle** (Refer to Figure 8), a cycle of continuous improvement that entails the reiterative actions of **plan**, **do**, **check** and **act**.

3.4.1 Plan

The EMP for the construction works *communicated the Environmental Policy* (**Section 4.1** and **4.2**) and intended environmental governance of the Applicant to all parties. The project will be implemented under this policy, and all parties acting on behalf of the Applicant will adhere to this policy. The organisational relationships required have been illustrated and the roles and responsibilities of each "organisation" have been defined (**Section 4.2**).

Project-specific planning for the replacement works involved listing activities associated with the works and the environmental aspects that may be impacted on. This provided a starting point from which aspect-specific environmental management objectives were established.

Environmental performance indicators were determined for these objectives and measurable targets were prescribed to monitor the environmental performance of the project.

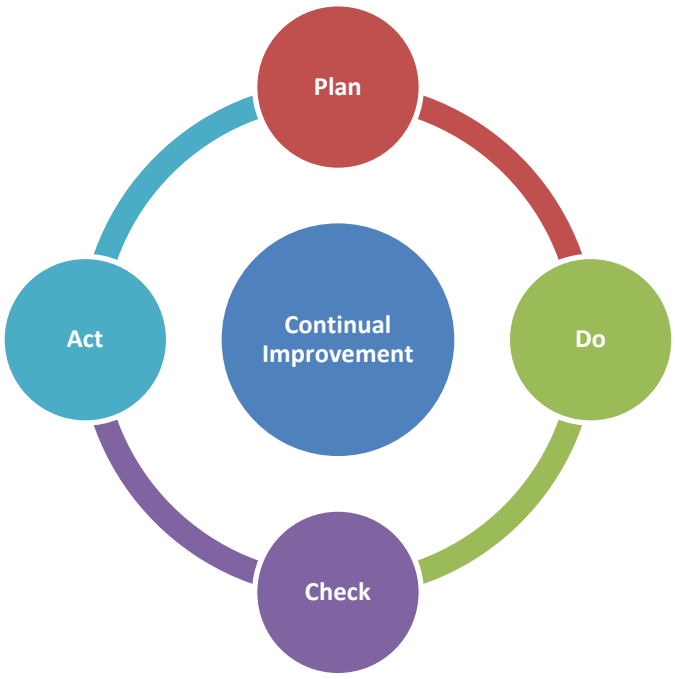

Figure 8: The Deming Cycle

Achieving the targets depends on **compliance with this EMP** and the legislative requirements that underpin it.

3.4.2 Do

Throughout the construction of the Transmission power line, the Applicant will be required to **develop and maintain a QMS** that is designed to ensure that best

management practices are implemented in day-to-day construction management. Such a QMS should include at least the following information:

- location and extent of associated infrastructure;
- associated activities, such as the transportation of people and equipment;
- resources and experience required (staffing);
- materials and equipment to be used;
- management actions;
- human resources used;
- construction-monitoring activities;
- emergency / disaster incident and reaction procedures; and
- rehabilitation procedures for the impacted environment.

Including these information topics in the Contractor's procedures and/or guideline documents will ensure that aspect-specific environmental management (based on this EMP) forms an integral part of the construction works. It is, therefore, important for the Contractor to integrate the environmental management requirements into the construction activities by way of set procedures that are set out in its QMS.

The **incorporation of the how and what** (Refer to Figure 8) will ensure that the Applicant understands what is required of it and that it allows systems to be put in place to ensure that the execution of the requirements is monitored. **The Applicant should also develop a programme for monitoring aspect-specific indicators in terms of the targets provided in the EMP**.

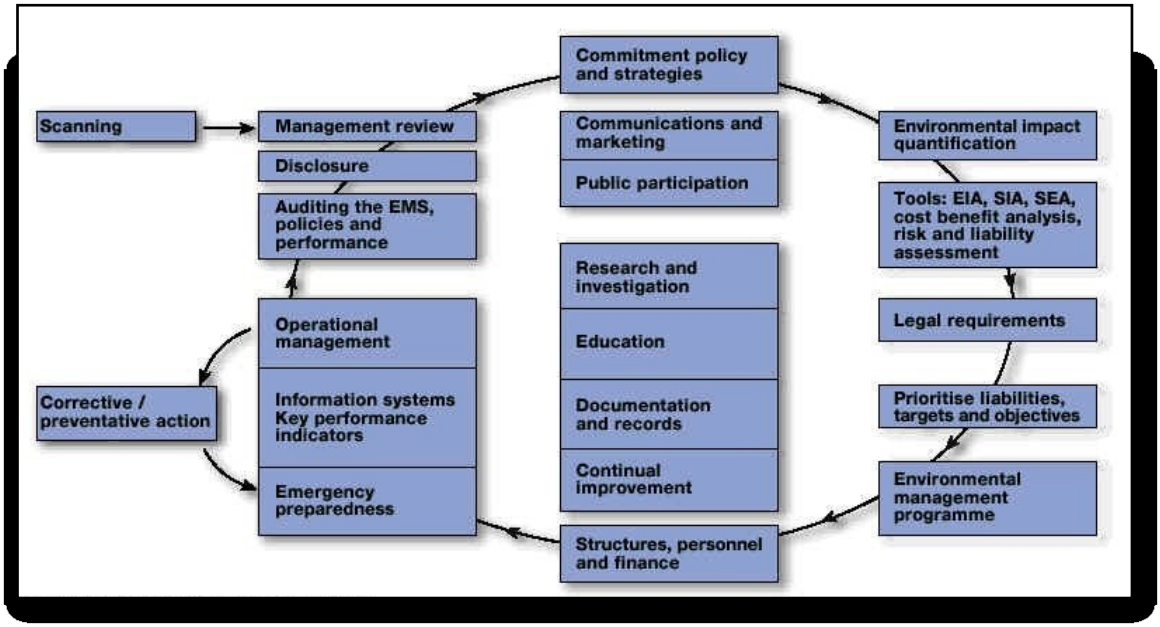

Figure 9: Eskom's EMS (based on ISO 14001[5])

[5] http://www.eskom.co.za/Enviro%20data%202002/report01/EMSdiagram.htm

3.4.3 Check

A system of **assessing monitoring results** has been developed (**Section 4.2**) to check the Applicant's environmental management performance. Continuous assessment facilitates **proactive management of environmental issues**. Mitigation measures can then be successfully implemented on an ongoing basis to keep environmental indicators within their target thresholds. Moreover, the assessment system also enables the **assessment of the efficacy of the EMP**.

Regular auditing of environmental performance (**Section 4.2**) is prescribed to prove and preserve accountability in a legislative context.

3.4.4 Act

The assessments and monitoring of the results and findings of the regular audits must be **documented within a reporting system** (**Section 4.2**). Precautionary mitigation measures and corrective actions will be prescribed and instructions will be given in order to implement these in the field.

The findings of monitoring and auditing programmes **can also be used to update the EMP**. Although the EMP is a project-specific document, it is dynamic and should be updated regularly to address the changing circumstances of the scheme.

3.5 Eskom's Environmental Management System

Eskom's Environmental Management System (EMS) is based on the ISO 14001 standard. This EMP forms an integral part of the cyclical structure (Deming Cycle) of the EMS, as shown in Figure 9.

4 EMP FRAMEWORK

4.1 Eskom's Environmental Policy

Eskom's Environmental Policy statement defines the principles by which the project will be guided. Eskom is committed to mitigating negative environmental effects associated with the construction of the Transmission power line, ensuring that activities are implemented in an environmentally responsible manner, and to promoting safe procedures for construction, operation and decommissioning.

Eskom will:

- establish appropriate management systems to address safety, occupational health, and environmental issues with a view to minimising risk and ensuring duty of care and the management of pollution and environmental degradation, performance monitoring, and continuous improvement;
- comply with all legislative and policy requirements and, in the absence of appropriate principles, set standards to meet the objectives of this policy;
- promote open communication on SHE issues with employees and all stakeholders;
- educate, train, motivate, and develop its employees in terms of occupational health, safety, and environmental issues;

- provide and maintain a safe and healthy work environment and protect individuals against risk associated with occupational health and safety arising out of Eskom's business; and
- contribute towards sustainable development through cost-effective resource use and efficient production, distribution, and use of energy.

4.1.1 Management systems

Management systems are used for establishing appropriate management systems to address safety, occupational health, and environmental issues with a view to minimising risk and ensuring continual improvement. This will include the prevention of pollution and environmental degradation and, where sustainable, will be supported by:

- ensuring compliance with SANS ISO 14001 or other appropriate quality standards;
- integrating SHE issues into all aspects of the organisation;
- determining, managing, and measuring the SHE impacts of Eskom activities;
- monitoring, managing, and reporting incidents, accidents, and events;
- setting and reviewing SHE performance targets;
- ensuring that compliance audits are conducted;
- ensuring the thorough investigation of accidents and incidents and taking appropriate corrective actions in case of deviations to prevent recurrence of similar incidents;
- researching and instituting ways to improve SHE operations and impacts;
- including environmental and safety considerations in procurement processes;
- reporting on performance in terms of this policy;
- benchmarking performance against other utilities; and
- divisions will establish and implement procedures for identifying significant risks and impacts along the extended electricity value chain, as appropriate, in order to communicate and encourage continual improvement in SHE practices beyond the traditional boundaries of the Eskom group, for example, with contractors.

4.1.2 Legislative and policy requirements

Complying with all legislative and policy requirements and, in the absence of appropriate principles, setting standards to meet the objectives of this policy will be supported by:

- ensuring that all legally required occupational health and safety and environmental factors and modern practices are taken into account in the design, construction, operation, and maintenance of all plant, machinery, equipment, and places of work;
- taking best practice and local needs and conditions into account when setting standards;
- while operating outside of South Africa (SA), local legislation or other mandatory standards will be applied if these exceed Eskom policy, without derogating from the local laws;
- while operating outside of SA, where standards imposed by local legislation are lower than those specified by Eskom, Eskom standards and policies and SA legislation will be used, without derogating from the local laws;
- in the absence of local legislative requirements while operating outside of SA, applying Eskom policy and South African legislative requirements to operations;

- ensuring that the required statutory appointments are in place and that these appointees fulfil their duties in terms of the relevant legislation and standards; and
- ensuring that incidents and events are reported to the necessary authorities as required by legislation and when appropriate.

4.1.3 Communication

Promoting open communication on Safety, Health and Environmental (SHE) issues with employees and other stakeholders will be supported by:

- communicating with employees, communities, and other concerned parties and stakeholders about Eskom's SHE programmes and performance; and
- publishing verified SHE-related information, including major incidents or legal contraventions, in the Eskom Annual Report.

4.1.4 Training

Educating, training, motivating, and developing its employees about safety, occupational health, and environment issues will be supported by:

- ensuring that employees are aware of safety, occupational health, and environmental standards, rules, procedures, regulations, codes, and guidelines;
- communicating on lessons learnt from incidents from a SHE perspective and revising procedures or policy where appropriate;
- encouraging staff to develop a sense of SHE responsibility; and
- giving due recognition to individuals and business units for exemplary occupational health, safety, and environmental performance.

4.1.5 Health and safety

Providing and maintaining a healthy and safe work environment and protecting individuals against risk to occupational health and safety arising out of Eskom's business will be supported by:

- providing, evaluating, and maintaining all operational procedures and methods of work in light of experience and new knowledge to proactively improve the management of occupational health, safety, and environmental risks;
- ensuring that all the risks are identified and that measures are taken and implemented as may be reasonably practicable to eliminate or mitigate any hazard or potential hazard to employees before resorting to personal protective equipment;
- maintaining discipline; and
- ensuring that managers are accountable.

4.1.6 Sustainable development

Contributing to sustainable development through efficient resource use and efficient production, distribution, and use of energy will be supported by:

- striving for cost-effective and efficient production, transport, and use of energy, by monitoring performance, setting targets, and highlighting the impact of inefficient operations;

- promoting the efficient use of materials, products, and services; and
- sharing lessons learnt and striving for continual improvement.

4.2 Institutional and Functional Arrangements[6]

The institutional and functional arrangements indicate the role players and institutional linkages in the Eskom Transmission power line construction (refer to **Sections 4.2.1 – 4.2.6**). The details are explained in this section.

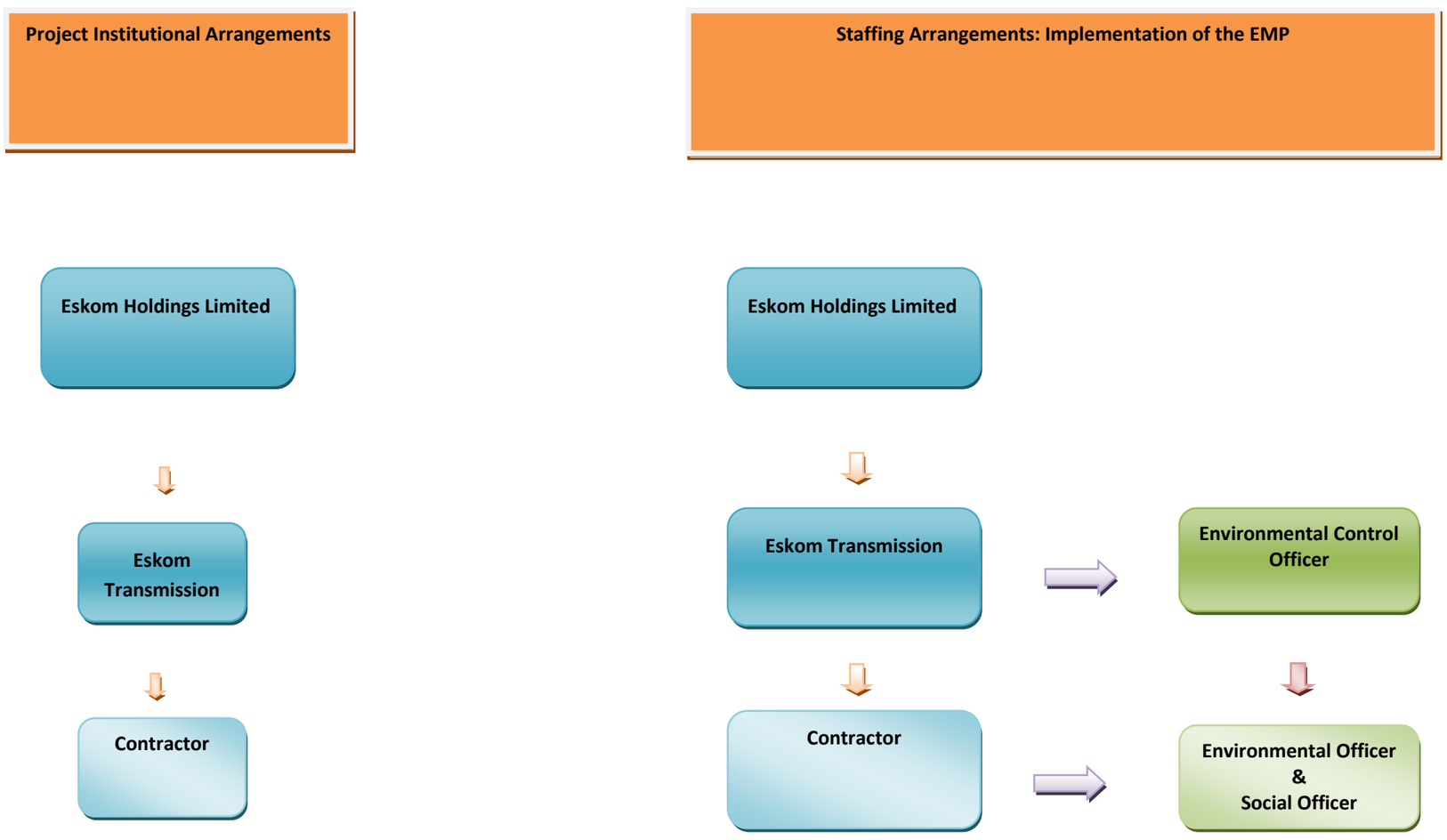

Figure 10: Institutional arrangements

6 In the context of the Construction of the 400kv Double Circuit Transmission Power Line from Firgrove to Mitchell's Plain and Mitchell's Plain Substation.

The following section should be read using Figure 10 as a reference.

During the construction phase it is the Applicant's (Eskom) responsibility to ensure that the Eskom Project Manager and Contractors involved in the construction of the Transmission power line receive a copy of the EMP and ensure compliance with it. The EMP is to be included as part of all tender documents. The appointed Contractor will be required to comply with the construction management regulations set out in this Draft EMP. The Construction Manager will be responsible for ensuring that all construction staff adhere to the Draft EMP specifications. A copy of the EMP and EA from the DEA will be kept on site at the construction site office and made available to all Contractor staff, regulatory authorities and I&APs upon request.

The roles and responsibilities of all role players are presented below.

4.2.1 Applicant

The Applicant (Eskom) will be responsible for overall environmental control on the project site during the construction, operation, maintenance, decommissioning and rehabilitation phases. The Applicant's responsibilities will include:

- Appointing an independent ECO for the duration of the Contract;
- Being fully familiar with the EIA Report, EA conditions and the EMP;
- Forwarding monthly audit reports (prepared by the ECO) to the DEA;
- Notifying the DEA of changes in the developments that result in significant environmental impacts;
- Notifying the DEA within 30 days of change of ownership/Applicant;
- Notifying the DEA of any change of address of the owner/developer;
- The overall implementation of the EMP;
- Ensuring compliance, by all parties, and the imposition of penalties for non-compliance through the Eskom Project Manager and ECO;
- Implementing corrective and preventive actions, where required;
- Preventing pollution and actions that will harm or may cause harm to the environment;
- Ensuring the activity does not commence within 30 days of the EA being issued;
- Notifying the DEA within 30 days that construction activity will commence;
- Notifying the DEA in writing within 24 hours if any condition in the EA cannot be or is not adhered to; and
- Notifying the DEA 14 days prior to commencement of the operational phase.

4.2.2 Eskom Project Manager

The Eskom Project Manager will be responsible for the implementation of the EMP throughout the construction phase and will report directly to the Applicant (or its appointed representative). The responsibilities of the Eskom Project Manager will include:

- Being fully familiar with the EIA Report, EA conditions and the EMP;
- Ensuring that all Contractors and Sub-Contractors adhere to the EMP;
- Maintaining a register of complaints and queries;
- Responding to any project-related complaints; and
- Maintaining an environmental incident book of all incidents occurring on site.

4.2.3 Contractor

The Contractor will:

- be responsible for the construction activities for the duration of the contract (so will Sub-Contractors and contract workers);
- Be responsible for ensuring work conducted is done within the framework of the EA, EMP and applicable legislation;
- Ensure that all Sub-Contractors have a copy of and are fully conversant with the contents of the EMP;
- Be required to provide Method Statements setting out, in detail, how management actions contained in the EMP will be implemented;
- Be required to monitor construction related impacts upon the surrounding environment as per the Environmental Monitoring Method Statement; and
- Appoint an Independent Environmental Officer (EO) and Social Officer (SO).

4.2.4 Environmental Control Officer

The construction activities must be monitored by an independent Environmental Control Officer (ECO). The ECO must be well versed in environmental matters and have a minimum of two years of relevant on-site construction experience. The ECO should have a relevant environmental degree or other relevant tertiary qualification. The ECO should be a mature, level-headed and firm person with above-average communication and negotiating skills, and be able to handle and address conflict management.

The ECO's responsibilities include:

- Monitoring compliance with the environmental requirements set in the EMP and EA;
- Reviewing a weekly environmental monitoring report that is submitted by the EO;
- Advising the Applicant and Eskom Project Manager about the interpretation, implementation and enforcement of the EMP;
- Liaising with an archaeologist or heritage resources practitioner in the case of unearthing of artefacts and/or graves;
- Recommending rectification of non-compliances with the EMP before significant impacts occur;
- Ensuring the Communications Register is maintained and all such complaints are dealt with within 10 days;
- Reporting any significant environmental incidents to DEA or other relevant regulatory authorities as may be required;
- Ensuring an environmental incident book of all incidents occurring on site is maintained and that corrective measures have been undertaken;
- Reviewing and approving Environmental Method Statements;
- Inspecting and reporting on the efficiency of the method statements' management and mitigation programme; and
- Ensuring environmental awareness training is offered to all site personnel.

The ECO is responsible for providing an independent evaluation of compliance with the EMP and not for enforcement of conditions of the EMP. The Applicant is responsible for enforcement of the conditions of the EMP.

The Contractor and the Environmental Officer are accountable to the ECO for non-compliance with the EMP. The ECO provides feedback to the Eskom Project Manager who, in turn, reports to the Applicant and I&APs, as required. Issues of non-compliance raised by the ECO must be taken up by the Eskom Project Manager and resolved with the Contractor as per the conditions of his/her contract.

The ECO will remain employed for the full duration of the contract until all snag items have been resolved, rehabilitation measures have been completed, and the site is handed over to the Applicant, thereby indicting the start of the operational phase.

4.2.5 Environmental Officer

The Environmental Officer must be appointed by the Contractor and is responsible for managing the day-to-day on-site implementation of the EMP, and for the compilation of weekly environmental monitoring reports. In addition, the EO must act as liaison and advisor on all environmental and related issues, seek advice from the ECO when necessary, and ensure that any complaints received from I&APs are duly processed and addressed and that conflicts are resolved in an acceptable manner and within 10 days. The EO shall be full-time dedicated member of the Contractor's Team and must be approved by the Eskom Project Manager.

The following qualifications, qualities and experience are recommended for the individual appointed as the EO:

- A relevant environmental diploma or degree in natural sciences, as well as a minimum of three years' experience in construction-site monitoring, excluding health and safety;
- A level-headed and firm person with above-average communication and negotiating skills. The ability to handle and address conflict management situations will be an advantage; and
- Relevant experience in environmental site management and EMP compliance monitoring.
- The EO's responsibilities include:
- Monitoring, on a daily basis, environmental specifications on site and compliance with the conditions of the EA, environmental legislation and EMP;
- Keeping a register of compliance / non-compliance with the environmental specifications;
- Identifying and assessing previously unforeseen, actual or potential impacts on the environment;
- Ensuring that a weekly environmental monitoring report is submitted to the ECO;
- Conducting site inspections during the defects liability period, and bringing any environmental concerns to the attention of the ECO and Contractor;
- Advising the Contractor on the rectification of any pollution, contamination or damage to the construction site, rights of way and adjacent land;
- Attending site meetings (scheduled and ad hoc);
- Presenting the environmental awareness training course to all staff, Contractors and Sub-Contractors and monitoring the environmental awareness training for all new personnel on-site, as undertaken by the Contractor;

- Ensuring that a copy of the EA and the latest version of the EMP are available on site at all times;
- Ensuring that the Contractor is made aware of all applicable changes to the EMP that are approved by the DEA;
- Assisting the Contractor in drafting Environmental Method Statements and/or the Environmental Policy where such knowledge/expertise is lacking;
- Undertaking daily environmental monitoring to ensure the Contractor's activities do not impact upon the receiving environment. Such monitoring shall include dust, noise and water monitoring; and
- Maintaining the following on site:
  - A weekly site diary,
  - A non-conformance register,
  - An I&AP's Communications Register, and
  - A register of audits.

The EO will remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is handed over to the Applicant.

4.2.6 Social Officer

The Social Officer(s) shall be employed by the Contractor and will be responsible for managing the day-to-day on-site implementation of the social aspects of the EMP. The Social Officer(s) shall liaise with landowners and relevant I&APs regarding construction activities for the duration of construction and will ensure that any discussions and complaints received from the public are addressed and that conflicts are resolved in an acceptable manner within 10 days.

The Social Officer(s) shall be full-time dedicated member(s) of the Contractor's Team and must be approved by the Eskom Project Manager. The Social Officer shall report to the Contracts Manager, seeking advice from the ECO when necessary.

The following qualifications, qualities and experience are recommended for the individual appointed as the Contractor's Social Officer:

- A relevant social diploma with 5 years of construction experience or a degree with 3 years of construction experience.
- Mature, level-headed and firm person with communication and negotiating skills.
- Report writing skills.
- The responsibilities and functions of the Construction Social Officer will include:
- Implement and manage the day-to-day social and communication aspects of the construction process according to the Specifications.
- Liaise and maintain good relations with I&APs.
- Monitor social aspects in terms of the specifications.
- Implement mitigation and corrective measures.
- Submit a monthly environmental report to the Social Monitor.
- Conduct site inspections during the defects notification period, and bring any social concerns to the attention of the Social Monitor and Contractor.
- Attend site meetings (scheduled and ad hoc).

- Maintain a filing system meeting the project's Quality Management Plan.
- Assist the contractor in the drafting of Social Method Statements where such knowledge/expertise is lacking.
- Maintain the following on site:
  - A daily site diary;
  - A public complaints and communications register; and
  - A register of audits.
  - Remain employed until the end of the Defects Notification Period (DNP), not necessarily full time during the DNP.

5 SUMMARY OF IMPACTS

All construction activities will be limited to the construction site, lay-down areas and construction site office / yard. All activities outside these areas need to be approved by the Eskom Project Manager prior to the commencement of construction works.

All interactions between the Contractor and I&APs will be via the Eskom Project Manager. The Contractor may not enter into agreements with I&APs or undertake work on private property in lieu of favours, payment or any other means where either party may benefit from the activities / permissions of the other party.

If the Contractor requires changes to the construction programme, these must be communicated via the Eskom Project Manager to the affected I&APs.

The identification and summarisation of impacts and risks associated with the construction of the Transmission power line are set out in this section.

1

5.1 Construction: Direct Impacts

The impacts from the construction of the proposed development will only be for the duration of the construction phase and should be limited to daylight hours. During the construction phase, overall activity within the project area will be increased. The placement of the construction site office will be within the site demarcated for the proposed development and access will be gained from designated routes only. Contractor employees shall be accommodated within existing accommodation and no placement of a construction camp to accommodate the construction workers shall be allowed. The contractor(s) will need to comply with all security measures detailed by Eskom.

Activities during construction, such as driving on gravel roads, the clearing of vegetation, construction of access roads and the excavations for the towers will generate windblown dust. For all the afore-mentioned, however, the construction period is for a relatively short time and any potential impacts associated with construction will be temporary.

5.2 Operations-Related Impacts

The impacts associated with the operation will include noise, health and safety, hazardous substance storage and emergency incidents. In addition, the substation will require routine maintenance. During this period, activities associated with the substation such as painting and cleaning would become more frequent.

6 ASSESSMENT OF IMPACTS

6.1 Impacts Identified in the Recommended Route Alignment

The impacts identified in the EIA Report for the study area are as follows:

- Biophysical impacts
  - Air Quality impact
  - Geotechnical impact
  - Impact on the soil
  - Impact on the agriculture
  - Impact on the wetlands
  - Impact on the ecology
  - Impact on the avifauna
- Social impacts
  - Impact on the heritage resources
  - Impact on the traffic
  - Impact on the visual integrity
  - Safety risks
- Waste-related impact
- Potential social conflict
- Economic impacts
- Potential cumulative impacts

6.2 Biophysical Impacts

6.2.1 Climatic Impact on Transmission Power Line

Operational: Due to loss in efficiency of the power line through vertical sag and the risks associated with wind induced horizontal swinging, the pylons cannot be placed more than 350m apart.

6.2.2 Air Quality impact

Construction: Corrosive properties of the pollution within the study could affect the power line infrastructure.

Smoke from fires or badly-maintained vehicles and dust generation in the study area

Operational: Corrosive properties of the pollution within the study could affect the power line infrastructure.

Smoke from fires or badly-maintained vehicles

6.2.3 Geotechnical Impact

Construction: Collapsible soils and foundation trench stability and Seismicity

6.2.4 Impact on Soil

Construction: Disturbance to soil profiles resulting in “droughtiness” in the deep Namib soils; and wetness / flooding in the Kroonstad / Escourt soil forms

Operational: Disturbance to soil profiles resulting in "droughtiness" in the deep Namib soils; and wetness / flooding in the Kroonstad / Escourt soil forms

6.2.5 Impact on Agriculture

Construction: placement of the pylons impacting upon economic productiveness.

Operational: Lon-term interference with farming operations due to Eskom maintenance of Transmission power lines

Identified problem areas:

- MS-D-33B
- MS-D-34B
- MS-D-35
- MS-D-36
- MS-D-37

6.2.6 Impact on Wetlands

Impact on the Kuils River floodplain, Driftsands Wetland and Mitchell's Plain wetland

Construction: Construction of the Transmission power lines

Operational: Maintenance of the Transmission power line along servitude

Identified problem areas:

- MS-C-1
- MS-C-35B
- MS-D-1Ba & b
- MS-D-12Ba & b
- MS-D-13a
- MS-D-14Ba
- MS-D-24a
- MS-D-24Bb
- MS-D-24Bc
- MS-D-26Bb
- MS-D-27a & b & c

6.2.7 Impact on Ecology

Construction: Vegetation clearance for the construction of Transmission power lines and its servitudes

Operational: Vegetation clearance for the maintenance of Transmission power lines servitude areas

Identified problem areas:

- MS-C-8B
- MS-C-14
- MS-C-15
- MS-C-30Ba & b

- MS-C-31
- MS-C-33
- MS-C-35B
- MS-C-12Ba & b
- MS-C-13a
- MS-C-14Ba & b
- MS-C-15b
- MS-C-21a & b
- MS-C-22
- MS-C-23b & c
- MS-D-1Bb
- MS-D-3
- MS-D-35
- MS-D-36
- MS-D-37
- MS-D-39
- MS-D-40
- MS-D-41B
- MS-D-42B
- MS-D-43
- MS-D-44
- MS-C-Gantry 3a

6.2.8 Impact on Avifauna

6.2.8.1 Bird mortality through collisions with the earth wires

Construction: n/a

Operational: Bird mortality through collisions with the earth wires of the 400kV Transmission power lines

Identified problem areas:

- MS-C-32
- MS-C-33
- MS-C-34
- MS-C-35B
- MS-D-12
- MS-D-13
- MS-D-14
- MS-D-15
- MS-D-16
- MS-D-17
- MS-D-18
- MS-D-47
- MS-D-48

6.2.8.2 Disturbance

Construction: Disturbance of birds, particularly Red Data species, by the activities associated with the construction of the proposed power line

Operational: Disturbance of birds, particularly Red Data species, by the activities associated with the maintenance

6.2.8.3 Habitat Destruction

Construction: Displacement of birds through habitat destruction, particularly of Red Data species, through the construction of the proposed power line

Operational: of Displacement of birds through habitat destruction, particularly of Red Data species, through the maintenance of the proposed power line the

6.2.9 Socio-economic Impacts during Construction Phase

Construction: Impacts associated with this phase of the project is thus of a short duration, temporary in nature, but could have long term effects on the surrounding environment.

Typically, the construction activities would entail the following:

6.2.9.1 Existing land use of Mitchell's Plain Substation

Impact of the Mitchell's Plain Substation on the existing and potential land use of the alternative sites.

6.2.9.2 Land acquisition

Economic impact due to land acquisition of the Mitchell's Plain Substation site

6.2.9.3 Switching station

Social impacts associated with the Switching Station

6.2.9.4 Employment

Employment creation and opportunities within the project area and beyond.

- Improvement in quality of life for a selected few, even if only for a short duration.
- Possible economic downfall of those individuals after the period of employment has lapsed as they have become used to a certain income level.
- Possible indirect job opportunities and economic growth.

6.2.9.5 Inflow of workers

Inflow of job seekers to work on the Transmission power line and the Mitchell's Plain Substation

- Added pressure on service delivery and the existing infrastructure with resultant additional socio-economic burdens for the CoCT and surrounding property owners should the jobseekers come from outside the study area, but permanently remain in the area after the construction period has ceased.

6.2.9.6 Inflow of Temporary Workers

Inflow of temporary job seekers

- Additional pressure on existing infrastructure.
- Possible increase in criminal activities in the area due to criminals taking advantage of the presence of outsiders being in the area.
- Impacts associated with the construction camps.

6.2.9.7 Impact of Construction Camp and Equipment Yards

Impact of construction camp and equipment yards on the local population

- Negative social impacts, usually associated with a construction camp, that could materialise include the following:
- Misbehaviour of construction workers at the construction camp (alcohol abuse, prostitution, temporary sexual relationships with local women with possible unwanted pregnancies, spreading of sexually transmitted diseases and so forth);
- Disrespect for the site specific local culture (if a large number of the workers include outsiders from other provinces or cultures) and possible social conflict between the local community and outsiders;
- Mismanagement which could result in safety and security concerns;
- Mismanagement which could lead to localised environmental problems (lack of sanitation and waste management, littering and so forth);
- Negative impacts on the environment could result in related health impacts on the surrounding communities such as pollution of water sources due to improper sanitation facilities, solid waste management or wastewater management.
- The development of informal vending “stations” where food and small goods are sold could, if not properly managed, also lead to littering, and possible pollution of water sources.

6.2.9.8 Impact of construction camp and equipment yards on the local population

- Consequences of misbehaviour of workers living at the construction camp (as discussed above).
- Mismanagement which could create environmental and health risks.
- Possible increase in crime due to criminals taking advantage of the construction camp and workers in the area.

6.2.9.9 Safety and security

Impact on safety and security of the residents in the study area

- Fires with possible loss of lives (human and animals) and economic losses due to residences being damaged or destroyed.
- Possible increase in criminal activities due to servitude being used as route to access properties.
- Increased pressure on service and infrastructure delivery should people erect dwellings within the servitude.
- Increased safety risks due to people residing in servitude area. Accidents involving pedestrians.

6.2.9.10 Daily Living and Movement Patterns

Impact of daily living and movement patterns of residents due to worker and vehicle movement and noise generated during the construction phase

- Possible environmental damage and pollution during construction.
- Possible erosion.
- Possible conflict between workers and residents.

6.2.9.11 Visual Impacts

Visual impact and experience of viewer

- Possible devaluation of properties within the agricultural areas and impact on sense of place.

6.2.9.12 Intrusion impacts of Mitchell's plain Substation

Creation of dust and noise during the construction of the Mitchell's Plain Substation

- Cumulative noise and dust due to other construction activities also taking place in the area surrounding Watergate Development and Mitchells Plain District Hospital.

6.2.9.13 Noise

Creation of noise due to construction vehicle movement and construction activities.

Possible noise impact on property owners in close proximity to the servitude or on illegal dwellers found within the servitude.

6.2.9.14 Dust Creation

Creation of dust due to construction vehicle movement and construction activities

- Possible economic losses for wine and olive farmers.
- Possible negative health impacts on residents.

6.2.9.15 Health

Impact of Transmission power line on health of residents and possible environmental pollution

- Possible health impact on dwellers settling within the servitude areas.
- Possible spread of sexually transmitted diseases and increased pressure on health services.
- Concerns were raised that should resettlement of people occur, it could lead to an increase in the prevalence of rodents in the area with subsequent health impacts.

6.2.9.16 Hospitality Industry

"Outsiders" obtaining accommodation in the Cape Town area

6.2.9.17 Commercial Development

Future developments in the area could be impacted by the proposed Transmission power line, as the eventual servitude alignment may affect proposed future township development and densifications, and vice versa.

6.2.9.18 Mitchell's Plain District Hospital

Impact of development plans and layout on the alignment of the proposed Transmission power line and vice versa

- Possible safety risks to proposed hospital due to proximity of alignment.
- Possible health-related risks to patients at the hospital.

6.2.9.19 Residential Developments

Impact of development plans and layout on the route alignment of the proposed Transmission power line and vice versa.

Possible loss of land due to servitude acquisitions or tower placements.

6.2.9.20 Impact on wine estates

Impact of the Transmission power line on the aesthetic value, historical importance (sense of place), visual impact and possible future developments of these properties

- Possible negative economic implications for the estates due to the negative impact on the resource use (vineyards) and sense of place resulting in less visitors to the estates.
- Possible devaluation of property value due negative visual impact.

6.2.9.21 Impact on Driftsands Nature Reserve (DNR)

Impact of the Transmission power line on the ecological importance, historical importance (sense of place), visual impact and community resource of the DNR

- MS-C-31
- MS-C-32
- MS-C-33
- MS-C-34
- MS-C-35B

6.2.9.22 Road Development

Impact of road development plans on the alternative route alignments and vice versa

- A snowballing effect with regards to resettlement due to the road and power line developments.

6.2.9.23 Agricultural Activities

Impact of agricultural activities in the study area

- Possible economic losses due to loss of resources use.

6.2.9.24 Tourism-related Impacts

A Transmission power line could impact on the tourism potential of facilities as it could impact on the visual character and sense of place of the area and tourism facility itself.

6.2.9.25 Local Economic Benefits

Local economic benefits and local procurements

- Contribution to additional positive economic spin-offs and economic wellbeing of the area and its residents, with the potential for further economic development.
- Positive impact on economic development in the region.

6.2.9.26 Resettlement

The following possible impacts and cumulative issues should be noted:

- Resettlement is a lengthy process associated with various levels of conflict arising between residents due to the perceived benefits that could accrue to those being resettled. Most groups in a settlement usually struggle to obtain as much benefit from the process as possible.
- The socio-economic status of the different residents (e.g. poor households/possible children headed households as a result of the impact of HIV/Aids) in the affected area could worsen the intricacy of the process. Resettlement of such households would severely affect their social cohesion and increase the insecurity experienced by these households.
- Political influences could exacerbate the complexity of the process.
- Settling of individuals and/or jobseekers from outside of the study area could occur as these individuals could aim to take advantage of the relocation process by posing as residents that should be resettled.
- Suitable land for the resettlement of individuals is usually not readily available. It is assumed that if appropriate serviced land would have been vacant, a process would have been initiated to relocate residents who are currently staying in extremely underprivileged living conditions. It is thus fair to state that acquiring suitable land could furthermore delay the relocation process and therefore the implementation process of the Transmission power lines.
- Negotiations with the owners of so-called “informal shacks”, where no title deeds have been registered could be problematic. This situation could become even more complex if one would be dealing with heads of households who are underage (as discussed under the second bullet above).
- Resettlement is a complex and lengthy process with dire consequences for those involved in the resettlement (those that need to be resettled and those communities to where these households would be moved to).
- Tension between the host community and the resettled communities, usually arising out of poor resettlement implementation, could result in violence between the different groupings forced to cohabit.

From a social perspective it is thus highly recommended that alternatives be found before resettling any individuals. Such alternatives would include the use of different types of pylon towers which can be considered for the proposed development that could have different impacts on the land use and subsequently on resettlement.

6.2.10 Impact on Heritage Resources

In the case of power lines, the worst accumulative impacts occur when the landscape is bisected by numerous facilities, which break up large tracts of country. It is always advantageous to utilise existing corridors.

Construction: Construction of Transmission power line may affect visual/aesthetic qualities as perceived from Cape Winelands (MS-D) and the DNR (MS-C).

Operation: Presence of Transmission power line may affect visual/aesthetic qualities as perceived from Cape Winelands (MS-D) and the DNR (MS-C)

- MS-C-30
- MS-C-31
- MS-C-32
- MS-C-33
- MS-C-34
- MS-C-35B
- MS-D-2Ba
- MS-D-3
- MS-D-4
- MS-D-5
- MS-D-6B
- MS-D-7
- MS-D-8
- MS-D-9B
- MS-D-10

6.2.11 Impact on Traffic

Construction: Potential traffic impacts relate primarily to the anticipated increase in vehicle usage of provincial and district roads, in particularly by heavy vehicles. This includes material delivery vehicles and vehicles that will travel daily to and from the construction camp to the sites being worked on at any given time. The limited numbers and types of vehicles that will be needed for the construction of the proposed development are known and potential effects are anticipated to be negligible (particularly considering the method of construction over time).

6.2.12 Impact on Visual Integrity

Overhead Transmission power lines are visually intrusive, and cannot be made otherwise. However, the power line envisaged for this proposed development would limit the visual intrusive nature of power lines within the area. Therefore, the visual impact created by the power lines connected to the substation would only be significant in terms of the cumulative effect of positioning power lines adjacent to one another.

- MS-C-2B
- MS-C-3B
- MS-C-4B
- MS-C-5
- MS-C-6B
- MS-C-7B
- MS-C-8B
- MS-C-9B
- MS-C-10

- MS-C-11
- MS-C-12B
- MS-C-13B
- MS-C-14
- MS-C-15
- MS-C-16Ba
- MS-C-16b
- MS-C-17a
- MS-C-17b
- MS-D-1Ba & b
- MS-D-2Ba & b
- MS-D-3
- MS-D-4
- MS-D-5
- MS-D-6B
- MS-D-7
- MS-D-8
- MS-D-9B
- MS-D-10
- MS-D-12Ba & b
- MS-D-13a & b
- MS-D-14Ba & b
- MS-D-15a & b
- MS-D-16Ba & b
- MS-D-17B
- MS-D-18Ba & b
- MS-D-22
- MS-D-23a & b & c
- MS-D-24a & b c & d & e
- MS-D-25a & b & c
- MS-D-26Ba & b
- MS-D-27a & b & c

6.2.13 Safety Risks

Operational: Residents of informal settlements staying beneath power lines experience increased levels of risk, should a power line snap the potential risk for fire and electrocution increases.

6.2.14 Waste-Related Impacts

The construction of the Transmission power line may result in the demolition or relocation of existing structures. Due to the limited number of residential properties impacted upon, it is not envisaged that waste volumes generated shall trigger the thresholds prescribed in the NEM:WA).

6.3 Potential Social Conflict

Areas of concern with regard to social issues in the study area have been identified based on the various route alignments:

- Delft South, located to the south of the Cape Town International Airport, west of the R300 and to the north of the N2 and Khayelitsha.
- Proposed new residential development to the east of Amandelrug and Rouxville, south of Bottelary Road.
- Possible spacing problems near the Zevenwacht shopping mall area and Saxenburg Industrial Park, located near the corner of Van Riebeeck Road (R102) and Stellenbosch Road (M12).
- Extensions of the Mfuleni area to the north. The Mfuleni area is located to the north of the Swartklip-Old Faure Road and directly east of the DNR.
- Bongani (informal settlement of Khayelitsha), situated to the south of the railway line as well as the area north of Lansdowne Road (M9) and west of Mew Way (M44) and south of N2..

7 ENVIRONMENTAL DOCUMENTATION, REPORTING AND COMPLIANCE

7.1 Documentation

The following documentation must be kept on the project site for the full duration of the contract:

- Environmental Management Plan approved by the DEA;
- environmental Authorisation issued by the DEA;
- environmental Policy of the Contractor;
- environmental Method Statements compiled by the Contractor;
- weekly environmental monitoring reports;
- minutes and attendance of all environmental meetings;
- environmental incident book;
- communications Register;
- register of audits;
- non-conformance reports;
- waste manifests; and
- relevant legislation referred to in Table 10.

7.2 Responsibility Matrix and Organogram

The Contractor must have a Responsibility Matrix and Organogram,, approved by the ECO and the Eskom Project Manager, displayed in an appropriate location. This will identify responsible parties, their contact details, and highlight their roles and responsibilities. This document must be updated on a regular basis to ensure that information is correct.

7.3 Environmental Inspections and Audits

Audits will be conducted to monitor compliance with the EMP and EA conditions. Photographic records of the site will support the visual assessment. The ECO will submit all audits to the Eskom Project Manager, who in turn shall submit the audits to the DEA. These findings will be kept on file on the project site.

External auditing may take place at unspecified times by the DEA and/or other relevant authorities. The DEA may, from time to time, also ask to view copies of audit reports drafted by the ECO.

7.4 Weekly Environmental Monitoring Report

The EO will be required to provide the ECO with a weekly environmental monitoring report covering the events of the past week. This will highlight key performance areas and provide feedback on corrective and preventive actions taken. The EO will have the weekly reports signed off by the Contractor's Manager prior to submission to the ECO.

7.5 Environmental Site Meetings

An Environmental Site Meeting shall take place on a bi weekly basis. This meeting shall be chaired by a Senior Eskom Site Representative with the ECO, Contractor(s), the EO ('s) and SO's in attendance.

7.6 Non-Conformance Report

A Non-Conformance Report (NCR) will be issued to the Contractor as a final step towards rectifying a failure in complying with a requirement of the EMP. This will be requested by the ECO and issued via the Eskom Project Manager to the Contractor in writing. Preceding the issuing of the NCR, the Contractor will be presented with an opportunity to rectify the outstanding issue.

Preceding requirements to the submitting of the NCR will entail an issue that has been highlighted to the Contractor in the audits for corrective action. Should this issue not be corrected or completed to the satisfaction of the Eskom Project Manager and ECO, the issue is escalated to an NCR.

Should the ECO assess an incident / issue and find it to be significant (e.g. non-repairable damage upon the environment), it will be reported to the DEA and immediately escalated to the level of an NCR. This will be done in consultation with the Eskom Project Manager.

The following information should be recorded in the NCR:

- Details of non conformance;
- Any plant or equipment involved;
- Any chemicals or hazardous substances involved;
- Work procedures not followed;
- Any other physical aspects; and
- Nature of the risk.
- Actions agreed to by all parties following consultation that should adequately address the identified non-conformance. This may take the form of specific control measures and should take the hierarchy of controls into account. This must accompany the NCR for filing purposes.
- The agreed timeframe by which the Contractor should have implemented the actions documented in the NCR.
- The ECO should verify that the agreed actions have taken place on or soon after the agreed completion date. Where the actions are complete, the ECO and Contractor should sign the Close-Out portion of the Non-Conformance Form and file it with the contract documentation.

7.7 Environmental Emergency Response

The Contractor's environmental emergency procedures must ensure that there will be an appropriate response to unexpected or accidental actions or incidents that could cause environmental impacts. Such incidents may include:

- Accidental discharges to water (i.e. into a water resource) and land;
- Accidental spillage of hazardous substances (typically oil, petrol, and diesel);
- Accidental toxic emissions into the air; and
- Specific environmental and ecosystem effects from accidental releases or incidents.
- The Environmental Emergency Response Plan is separate to the Health and Safety Plan as it is aimed at responding to environmental incidents and must ensure and include the following:

- Construction employees shall be adequately trained in terms of incidents and emergency situations;
- Details of the organisation (manpower) and responsibilities, accountability and liability of personnel;
- A list of key personnel and contact numbers;
- Details of emergency services (e.g. the fire department, spill clean-up services) shall be listed;
- Internal and external communication plans, including prescribed reporting procedures;
- Actions to be taken in the event of different types of emergencies;
- Incident recording, progress reporting and remediation measures to be implemented; and
- Information on hazardous materials, including the potential impact associated with each, and measures to be taken in the event of accidental release.

The Contractor(s) will comply with the environmental emergency preparedness and incident and accident-reporting requirements, as required by the Occupational Health and Safety Act (Act No. 85 of 1993), the National Environmental Management Act (Act No. 107 of 1998), the National Water Act (Act No. 36 of 1998), and/or any other relevant legislation listed in Table 10.

7.8 Method Statements

It is a statutory requirement to ensure the wellbeing of employees and of the environment. Therefore, the Contractor must submit a Method Statement to the Eskom Project Manager and the ECO for approval prior to the commencement of construction works.

A Method Statement is a document detailing how a particular process will be carried out. It should detail the possible dangers/risks associated with the particular part of the project and the methods of control to be established and to show how the work will be managed in a safe and environmentally responsible manner. The method statement shall also include the following applicable information:

- the type of construction activity;
- timing and location of the activity;
- construction procedures;
- materials and equipment to be used;
- transportation of the equipment to and from site;
- how the equipment/material will be moved while on site;
- location and extent of construction site office and storage areas;
- identification of impacts that might result from the construction activity;
- population impacts;
- community/institutional arrangements;
- conflicts between local residents and newcomers;
- individual and Family level impacts;
- community infrastructure needs;
- intrusion impacts;

- methodology and/or specifications for impact prevention or containment and for environmental monitoring;
- emergency/disaster incident and reaction procedures (required to be demonstrated); and
- rehabilitation procedures and continued maintenance of the impacted environment.

The Contractor will be accountable for all actions taken in non-compliance of the approved Method Statements. The Contractor shall keep all the Method Statements and subsequent revisions on file, copies of which must be distributed to all relevant personnel for implementation.

The Contractor will be required to submit, as a minimum, the Method Statements listed in Table 13 for approval by the Eskom Project Manager and the ECO (Please refer to Annexure E) prior to the start of construction activities.

Table 13: List of Method Statements required prior to Construction

Method Statement	Objective	Target	Criteria
Access	To institute adequate access agreements and measures to ensure the safety of landowners and integrity of the gates/fences.	No damage to existing gates and fences. All gates equipped with locks to prevent unauthorised access. No complaints about open gates. Compliance with regulatory requirements.	Access agreements between Contractor and landowner. Implementation of suitable access and fencing requirements.
Aesthetics	Reduce construction impacts upon the aesthetics of the surrounding environment.	No complaints from I&APs.	Implementation of measures to reduce impacts upon the aesthetics of the surrounding landscape.
Bunding	To contain and manage all hazardous substance releases into the environment.	Zero spills No environmental pollution occurring. Management according to agreed procedures.	Method of bunding and covering for static and mobile plant
Construction Site and Office / Yard Establishment	To ensure site infrastructure, plant, materials and equipment are contained within a suitably secure locality that is adequately zoned and authorised in terms of regulatory requirements.	No complaints from landowners No damage to private property Compliance to regulatory requirements. No unplanned disturbance to construction related activities.	Site office/yard layout and preparation Method of installing fences required for no-go areas, working areas and construction areas Preparation of the working area Removal of vegetation
Cement Mixing / Concrete Batching / Bentonite Mixing	Provide measures to contain cementitious products impacting upon the surrounding environment.	All cementitious mixing to occur within demarcated localities. No indiscriminate spoiling of cementitious products in non designated areas. No impacts upon receiving water resources.	Location, layout and preparation of cement / concrete batching facilities, including the methods employed for mixing concrete and the management of run-off water from such areas.
Construction in rivers and wetlands	Minimise the impact and maintain integrity of affected water resources.	Less than 10 % change between values measured 50 m upstream and within 300 m downstream of construction activities.	The construction methodology through rivers and wetlands.
Contaminated Water	Ensure no contamination or pollution of water impacted upon by construction related activities.	All waste and contaminated water must be monitored and comply with regulatory requirements.	Contaminated water management, including the containment of run-off and polluted water

Method Statement	Objective	Target	Criteria
Dust	Reduce construction related dust impacts on the surrounding environment. Prevent dust nuisance and health impacts on people and animals in the area.	No complaints from I&APs. Dust emissions must be monitored and comply with regulatory requirements.	Dust control and monitoring measures
Environmental Monitoring	Implement a programme whereby impacts upon the surrounding can be monitored and implement measures to mitigate such impacts.	Compliance with regulatory requirements. Ensure no incidents or accidents occur which negatively impact upon the surrounding environment.	Monitoring construction-related impacts upon the surrounding environment is kept within the environmental specifications and applicable legislation. The following variables are to be monitored: Dust (e.g. by using reused water) Noise (increase of 7dB above ambient is considered disturbing noise) Contaminated water (through dewatering operations, etc) Waste: waste manifests for waste disposal including waste sent for recycling
Erosion control	Prevent erosion and reduce potential impacts upon the surrounding environment.	Slopes > 1:1 must have additional anti-erosion mechanisms. No evidence of erosion. No evidence of disturbance outside of project area.	Method(s) of erosion control, including erosion of spoil material
Fire, Hazardous and Poisonous Substances	Impose a “no fire” rule on the entire project unless otherwise indicated in writing by the Eskom Project Manager. Reduce potential impacts in the event of a fire incident. To manage, mitigate and control the potential occurrence of an incident / accident involving hazardous and poisonous substances.	Zero (0) fires. Proof of annual update and approval of the fire management Method Statement. Proof of management review of fire preparedness and response before onset of the fire season. Storage of hazardous/flammable materials and substances to comply with national, provincial and local regulatory requirements	Handling and storage of hazardous substances Emergency spillage procedures and compounds to be used Fire management plan and emergency procedures in case of fire Use of herbicides, pesticides and other poisonous substances Methods for the disposal of hazardous building materials Material Safety Data Sheets to be included where applicable

Method Statement	Objective	Target	Criteria
Flora and Fauna	Preserve fauna and flora through control of construction activities, particularly in sensitive environments, and through search and rescue operations. Reduce the impact of the project on the surrounding vegetation during construction. Prevent infestation of alien species during construction.	No evidence of disturbance outside of project area. All sensitive environments are to be demarcated as no-go areas unless otherwise indicated by the Eskom Project Manager. No construction related activities or facilities allowed within sensitive environments, unless prior approval is attained from the Eskom Project Manager. Proof of monthly removal of alien invasive species.	Implementation of measures to protect the flora and fauna identified within the project footprint.
Fuels and Fuel Spills	Manage and contain all refuelling activities to prevent and mitigate potential impacts.	All refuelling to occur within designated areas. All hydro carbons to be contained within approved bunded facilities. Identified staff to undergo suitable spill clean up training.	Methods of refuelling vehicles Details of methods for fuel spills and clean up operations
Heritage	Limit and mitigate potential heritage impacts on chance findings should they occur.	No damage to heritage structures, unless proof of consultation with a heritage specialist and approval from the SAHRA is in place. Records of chance finds must be kept. Where chance finds are unearthed, proof of work being stopped immediately and proof of consultation with a heritage specialist and the SAHRA must be kept on site.	Measures to be implemented to identify, manage and protect “chance finds” and known items of historical or cultural value.
Noise	Reduce construction related noise affecting the surrounding environment.	Noise levels shall be monitored to ensure they comply with regulatory requirements. Noise generating activities shall not increase by more than 7dB above ambient noise levels. No complaints from I&AP’s	Implement measures to reduce noise impacts generated through construction related

Method Statement	Objective	Target	Criteria
Rehabilitation	To rehabilitate impacted areas to a suitable land capability class similar to that of the surrounding environment. Rehabilitation will take existing land uses into consideration. Rehabilitation should start on sections of the route immediately after work is completed.	Reinstatement of areas affected through construction related activities. Proof of monthly removal of alien invasive species re-establishing on cleared areas. The final placement of layers of soil on the wetland bed must match the pre-construction profile. A 50% grass cover shall be achieved within 1 month of the onset of the next growing season following hydroseeding and 80% cover within 2 months thereafter. • Minimum of 60% **mature** vegetation cover being achieved during the first growth season. • Minimum of 80% mature vegetation cover achieved at the end of the maintenance period.	Rehabilitation of disturbed areas and re-vegetation after completion of construction related activities.
Solid and Liquid Waste Management	Implement measures to reduce, monitor and manage waste generation, whilst maximising recycling efficiency.	Ensure all waste products are disposed of at a registered waste landfill site designed to cater for said waste product. Proof of waste generated, reused, recycled and disposed of, including disposal certificates, must be kept on site. Contain all waste with in approved designated areas and stored in marked containers. Containers of hazardous waste and waste oils must be stored in a bunded, covered area. No evidence of contamination by waste. Bins provided at regular intervals. No evidence of litter.	Solid and liquid waste control and removal of waste from site. Methods for the disposal of vegetation, paper and plastics and/or building materials Methods for the recycling of oils etc.

Method Statement	Objective	Target	Criteria
Social	Maximise social benefits and minimise negative social impacts	No complaints from affected landowners No project delays due to landowner interference All landowners signing release forms within 1 month of completion of the contract.	Methods for avoiding danger and causing the least possible inconvenience to the public (including pedestrians), traffic and vehicle traffic
Sources of Materials	Source materials which have been legally mined or manufactured.	Provision of all Material Safety Data Sheets (MSDSs) for all products used on site.	Details of materials imported to the site. MSDS are to be included.
Topsoil and Subsoil Management	Manage the removal and stockpiling of topsoil and subsoil during the contract for use during rehabilitation.	Soil horizons (stockpile separately). Stockpiles should not be higher than 2 m. Stockpiles will be kept free of alien invasive species. No stockpiles shall be located within the 1:100 floodline. No stockpiles shall be located outside of areas indicated in the construction servitude diagrams.	Removal of topsoil and subsoil. Storage of topsoil and subsoil, including erosion prevention methods
Traffic	Minimise the impacts and extent of construction related traffic on the surrounding road network and environment, whilst maximising road user safety.	No accidents or incidents. No complaints from the public. Proof of notification of landowner for closure of access roads. Alternative access roads always provided at partial road closures and other traffic disruptions. Compliance with regulatory requirements.	To ensure construction related transport activities do not impact upon landowners and the surrounding environment. Activities associated with the transport of materials and staff are not negatively upon by construction related requirements.
Training	Foster construction related skills transfer, environmental awareness, health and safety awareness, and materials and equipment skills.	Proof of training provided, including training materials that meet the requirements of the Eskom Project Manager. Proof of attendance of staff at training. Records of training evaluation results. Results must reflect that training has been effective.	Logistics for the environmental awareness course for all of the Contractor's employees and temporary labour, as well as for the Contractor's management staff.

Method Statement	Objective	Target	Criteria
Wash Areas	To ensure plant and equipment used on site are kept clean whilst containing and preventing the release of potential contaminants into the receiving environment.	No contamination of the receiving environment through the washing and cleaning of equipment and plant. Compliance with regulatory requirements.	Location, layout, preparation and operation of all wash areas, including vehicle washing, workshop washing, paint washing and clearing Method for the treatment of wastewater prior to discharge

7.9 Communications Register

All complaints or communications that are received from I&APs or any other stakeholder must be recorded in a Communications Register. These complaints and communications will be brought to the attention of the Eskom Project Manager, whereupon it will be investigated and a response to the Complainant, I&APs or stakeholder will be given within 10 days.

The Communications Register shall include the following information:

- Record the time and date of the complaint/communication;
- A detailed description of the complaint/communication;
- Action and resources used to correct the complaint;
- Photographic evidence of the complaint (where possible);
- A written response to the Complainant indicating rectification of the complaint; and
- Information regarding the relevant authority that was contacted or notified in writing (person, time and date).
- The relevant authorities include:
- Department of Water Affairs (e.g. for any incidents involving the contamination of water resources);
- Department of Environmental Affairs and Development Planning (DEA&DP) (e.g. for any significant incident of pollution of the soil and air);
- Department of Agriculture, Forestry and Fisheries (e.g. uses of appropriate herbicides for eradication of alien invasive species, and permits for trees of special concern);
- Department of Health (e.g. for incidents such as contamination of water resources, accidental spill of hazardous substances);
- Department of Transport and Public Works (e.g. for the diversion of traffic due to construction activities);
- Department of Labour (e.g. for labour disputes);
- Western Cape: Department of Agriculture
- CapeNature
- City of Cape Town (CoCT) Disaster Management Services (e.g. for fire prevention); and
- CoCT Environmental Health Department (e.g. for control of nuisances).
- CoCT: Electricity Department (e.g. impacts upon electricity provision)
- CoCT: Biodiversity Department (e.g. management of works within CoCT conservation areas)
- CoCT: Environmental Resources Management (e.g. issues pertaining to environmental management)
- CoCT: Catchment, Stormwater and River Management (e.g. issues pertaining to drainage and stormwater management)
- CoCT: Transport (e.g. road closures and diversions)
- CoCT: City Parks (impacts upon open spaces)
- CoCT: Housing (e.g. resettlement activities)
- CoCT: Property Management (e.g. resettlement activities)
- CoCT: Solid Waste Management (e.g. waste derived from demolition activities)
- CoCT: Water and Sanitation (e.g. impacts pertaining to reticulation services)

7.10 Photographic Record

The ECO, EO and SO will be required to compile a photographic record of all activities on site prior to construction related activities starting, during the construction process and on completion of construction related works. This will include photographs for:

- Monthly environmental audit reports;
- Weekly environmental monitoring reports;
- Corrective action;
- Progress of environmental works; and
- Non-conformance reports.

7.11 Waste Manifests

The Contractor shall ensure that all solid (including any hazardous) waste removed from site is disposed of at a registered landfill site or nearby waste transfer station with capacity to accept the project generated waste. The waste manifest shall be kept on record for auditing purposes.

7.12 Good Housekeeping

The Contractor is to practice good housekeeping throughout the construction phase. This should eliminate disputes about responsibility, facilitate efficient and timeous running of the project. Over and above practising accepted construction methods in accordance with SANS 10120, this should include measures to preserve the environment inside the work area. Records of such actions taken to ensure the maintenance and management of housekeeping must be recorded.

7.13 Final Environmental Compliance Report

A Final Environmental Compliance Report will be compiled by the ECO for submission to the Applicant at the end of the construction phase. The report will include details of:

- the completion of all environmental conditions and mitigation measures listed in the EMP and the EA;
- all environmental incidents and completed corrective actions;
- the findings of the Environmental Audits;
- conclusions as to whether environmental constraints, guidelines, norms and stipulations have been met and, if not, reasons why they have not been met;
- An indication of the outcomes of the environmental monitoring conducted;
- all Monthly Environmental Monitoring Reports (as an attachment);
- a copy of all Method Statements (as an attachment);
- a copy of the environmental Incident Book (as an attachment); and
- a copy of the Communications Register.

8 MANAGEMENT OF ENVIRONMENTAL REQUIREMENTS

The Contractor shall record and report upon environmental management measures undertaken to mitigate assessed impacts upon the environment (Please refer to Annexure C).

8.1 Management and Control

The Contractor is to implement environmental management in a reasonable manner and should such management not prove effective, shall implement measures to the satisfaction of the Eskom Project Manager.

Appropriate measures shall include:

- Appointment of necessary resources to monitor and manage environmental requirements.
- Implement aspect specific method statements to deal with emergency situations.
- Provision of adequate emergency response equipment to mitigate and manage an incident or emergency.
- Provision of specific training related to implementation of environmental management requirements.

8.2 Recording and reporting

The Contractor shall maintain detailed records of parameters monitored. These detailed records shall demonstrate the effectiveness of the management actions implemented to mitigate potential impacts.

The Contractor shall submit a monthly database/report of management works implemented to the Eskom Project Manager, as part of the Contractors monthly report.

8.3 Monitoring

The Contractor shall submit an Environmental Monitoring Method Statement which details the scope, nature, process, schedule and templates for environmental monitoring.

The monitoring results shall be used to determine the effectiveness of the management programme.

All complaints, compliments or other comments relating to environmental management parameters are to be recorded in the site issues register of the Contractor for inclusion in the project issues register held by the Applicant.

Monitoring results and the associated required management and mitigation actions for the coming monitoring period are to be presented in the monitoring section of the Contractors Monthly Report.

The daily and weekly reports are to detail observations and information relating to requested management actions and their effectiveness.

The Contractor shall monitor and maintain the following on an ongoing basis:

- Re-growth of alien invasive vegetation
- Validity of the Pest Control Officer certificate
- Fire break requirements around the site clearing operations
- Stormwater systems
- Topsoil and backfill volumes

- Access road condition
- Dust generated from stockpiles
- Noise
- Water Quality
- Erosion prevention
- Landscaping requirements for rehabilitation
- Spoil management
- BBBEE compliance
- Employment Equity
- Skills Development
- Preferential Procurement
- Enterprise Development

The Contractor shall submit a monthly database of *inter alia* the following works to the Eskom Project Manager. This data base is to include as a minimum:

- Extent of alien invasive clearing operations
- Volumes of herbicide used on the project
- Stockpile volumes of chipped material, topsoil, fertile soil and sub soil.
- Volume of recyclable waste removed from site
- Water volumes recycled and used for dust suppression
- Maintenance of chemical toilets

All complaints, compliments or other comments relating to construction related works are to be recorded by the Contractor in the Communications Register of the receiving party for inclusion in the project issues register.

Site clearance monitoring results and the associated required management and mitigation actions for the coming monitoring period are to be presented in the monitoring section of the Contractors Monthly Report.

The weekly report and daily reports are to detail observations and information relating to requested management actions and their effectiveness.

The Contractor must submit detailed terms of reference for the appointment of a professional service provider (PSP) to undertake the environmental monitoring programme for water quality, dust and noise monitoring. The PSP must meet minimum professional requirements for:

(i) qualifications;
(ii) professional registration;
(iii) experience and track record;
(iv) demonstrated proficiency in use of relevant monitoring and sampling equipment;
(v) equipment requirements and tolerances for detection limits;
(vi) reporting and analysis;
(vii) confirmation of laboratory accreditation, capacity, delivery and performance within reasonable timeframes

9 TRAINING AND INDUCTION OF EMPLOYEES

The Eskom Project Manager and Contractor are to take responsibility for the management of staff on the project site during the construction phase and supervise them closely at all times. The onus is on the Eskom Project Manager and the Contractor to make sure that all staff and Sub-Contractors fully comprehend the contents of the EMP. The environmental awareness training programmes should, therefore, be targeted at the two levels of employment: management and labour. Environmental awareness training programmes need to be formulated for these levels and must comprise:

- A record of all names, positions and duties of staff to be trained;
- A framework for the training programmes;
- A summarised version of the training course(s); and
- An agenda for the delivery of the training courses.
- Such programmes will set out the training requirements, which need to be conducted prior to any construction works occurring and will include:
- Acceptable behaviour with regard to flora and fauna;
- Management and minimising of waste, including waste separation;
- Maintenance of equipment to prevent the accidental discharge or spill of fuel, oil, lubricants, cement, mortar and other chemicals;
- Responsible handling of chemicals and spills;
- Environmental emergency procedures and incident reporting; and
- General code of conduct towards I&APs.

The ECO may be requested to provide additional training (in a first language) on-site regarding environmental aspects that are unclear to the construction personnel. A translator may be required and requested to assist in this additional training. The cost for the translator will be borne by the Contractor.

10 SUSPENSION OF WORKS

If the Contractor has not complied with one or more of the clauses of the EMP the ECO may recommend the withholding of the payment certificate or the suspension of construction works to the Eskom Project Manager and the Applicant. This may be conducted after having served the Contractor with a NCR and until the Contractor complies with the clauses of the EMP. All delays resulting from such suspension shall be at the Contractor's expense.

11 RESOURCE ALLOCATIONS

Financial implications for items and activities mentioned in the EMP must be recognised by the Applicant (for all phases except construction) and the Contractor (for the construction phase) and provision for these costs must be made. Such costs can include (but may not be limited to) mitigation actions, environmental awareness training, monitoring and auditing requirements and measures for rectification and rehabilitation, management of archaeological / heritage findings unearthed during construction, including any equipment or specialists required for these items.

12 IMPLEMENTATION OF THE EMP

The EMP provides an integrated approach to environmental management. This approach is designed to guide the appropriate allocation of human resources, assign responsibilities, develop procedures and ensure project compliance with regulatory and best practice requirements.

12.1 Eskom Guideline documents

The Contractor shall be required to implement the Eskom specific requirements contained within the guideline documents, as listed in Table 14 below, where required in Section 12.3 Implementation Tables below.

Table 14: Eskom Guideline Documents

Guideline Document	Reference No#
Eskom policy	ESKPBAAD4
Environmental Management Plan	EPC 32 - 96
Safety, Health, and Environment (SHE) Policy	EPC 32 - 94
Transmission Environmental Policy	TPL 41 435
Transmission Bird Perch Guideline	TGL41-332
Vegetation Management	TGL 41 334
Transmission Bird Collision Prevention Guideline	TGL41-335
Fire Protection Association Guideline	TGL 41 336
Soil Erosion Guideline	TGL 41 337
Transmission Servitude Gates Standard	TGL41-338
Bush Clearance Policy	ESKASA BG3
Herbicide Management Policy	ESKPBAA D4
Safe Use of Herbicides and Pesticides	ESKASAA L0
Fire Risk Management	TLL 32 124
Access to Farms Guideline	TPC 41 340
Waste Management Policy	ESKPBAAC4
Transmission Power Line Towers and Line Construction	TRMSCAAC1

Where conflict exists between these guideline document and the environmental specifications in this EMP, the environmental specifications shall take precedence over these guideline documents because the EIA has identified site-specific mitigation

measures that are not included or may be in conflict with the measures in the guideline documents.

12.2 Aspect and Activities Matrix

Environmental aspects identified during the site visit, literature review and EIA process, as well as aspects generally associated with construction-related activities have been identified and listed in Table 15.

Construction-related activities could have an impact on one or more of the aspects identified, as indicated by a tick mark in Table 15. The Applicant will be required to check which aspects may be affected by which construction-related activity and to put measures in place to mitigate or reduce the impacts on each aspect.

The Contractor will have to monitor, implement and demonstrate to its performance in environmental management and impact mitigation. Thus, **aspect-specific performance measures (indicators and targets) have been provided** in the implementation tables in **Section 12.3** to which the Contractor must adhere.

Table 15: Aspects / Activities

ACTIVITY / ASPECT	Aesthetics	Dust	Earthworks	Erosion	Fauna and flora	Fire	Hazardous materials	Heritage	Land use	Noise	Rehabilitation	Soil management	Traffic	Training	Waste management	Water management
Access tracks			✓						✓							
Basic environmental awareness training	✓	✓	✓		✓	✓		✓		✓			✓			
Dust management	✓	✓	✓			✓			✓	✓			✓	✓	✓	✓
Emergency response		✓	✓	✓	✓			✓	✓	✓			✓	✓		
Erosion management	✓	✓	✓			✓			✓	✓			✓	✓	✓	✓
Fauna and Flora		✓		✓	✓	✓					✓	✓				
Fire management		✓			✓				✓	✓			✓	✓		
Hazardous substances	✓	✓	✓		✓	✓	✓			✓		✓	✓	✓	✓	✓
Monitoring, auditing and incident reporting		✓	✓			✓	✓	✓	✓	✓			✓	✓		
Noise management	✓	✓	✓	✓	✓						✓			✓	✓	✓
River crossings		✓	✓		✓	✓	✓		✓	✓	✓					
Rehabilitation	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
Social		✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓
Storm water management	✓		✓			✓	✓		✓		✓	✓	✓	✓	✓	✓
Traffic management		✓	✓	✓			✓		✓		✓			✓	✓	✓
Waste and effluent management	✓	✓	✓	✓	✓		✓		✓		✓	✓		✓	✓	✓
Water management			✓	✓	✓		✓		✓		✓	✓		✓	✓	✓

12.3 Implementation Tables

The Implementation Tables describes the aspect-specific objectives for achieving environmental best practice. The tables present performance indicators for each aspect and give a target threshold (qualitative and/or quantitative) that must be met for each indicator.

12.3.1 Environmental Specifications - Construction Activities - Planning and Design Phase

Planning and Design Phase			
Activity/Issue		**Action required**	**Responsible Party**
1.	**Appointments**	Appointment of an independent Environmental Control Officer.	Applicant
2.	**Aspects to be included in the design**	Development activities must be included within the design to ensure environmental resources are not unduly impacted upon during construction. An experienced ECO shall review all designs prior to design finalisation. All construction activities are to be completed within the DEA approved footprint (comprising the servitude width and the individual pylon tower footprints). The design of construction-related works associated with the project implementation shall aim to minimise the loss of environmental functioning and integrity. Planning and design shall take cognisance of current and future developments and any such considerations being included within the planning and design of the Transmission power line. Existing services shall not be impacted upon. All footings, chambers, poles, fences or services shall be placed a minimum of 1.5 metres away from all existing services.	Applicant
3.	**Land Acquisition**	Eskom should discuss the layout of the Mitchell's Plain Substation site with the CoCT to limit any possible negative impacts on the potential future land use and immediate surrounding property owners.	Applicant
4.	**Residential Developments**	Eskom should liaise with the developers and representatives of the CoCT during the negotiation phase of the project to ensure a route alignment which would ensure the protection of the land value and resources and which would also be to the socio-economic benefit of the communities. Eskom should negotiate with the developer to allow space for some tower footprints across the Watergate Development site to enable them to reach the proposed Mitchells Plain Substation.	Eskom Project Manager, Contractor, EO, SO, ECO
5.	**Employment creation**	Ward councillors and officials from the CoCT could assist in determining local sub-contractors and/or labourers that should be considered for possible employment e.g. those sub-contractors residing in the affected areas with the necessary skills, local labourers who are on the Indigent List or who have family members on the local Indigent Lists. The tender documentation should stipulate the use of local labourers or enterprises. The use of local labour should be maximised. Where local skills are not available for the operation and maintenance of the Transmission power line, Eskom should consider capacity building and training to ensure that locals are employable. It is recommended that Eskom should implement a skills audit and develop a skills database. It should be ensured that contractors use local skills, or train semi-skilled people or re-skill appropriate candidates for employment purposes where possible. On-site training should focus on the development of transferable skills (technical, marketing of their own skills and entrepreneurial skills) to ensure long term benefits to the individuals involved.	Eskom Project Manager, Contractor, EO, SO, ECO
6.	**Inflow of workers**	Maximise the use of local labour and contractors where possible by developing a strategy to involve local labour in the construction process The recruitment process and the use of contractors should be clearly communicated to the local communities The communication strategy should ensure that unrealistic employment expectations are not created. A representative of Eskom could liaise with the local councillors to either attend key community meetings arranged within the various wards to discuss the employment and recruitment process; or liaise with the local councillors to ensure that the correct information regarding this issue is portrayed to the communities via the councillors. Eskom personnel should preferably not access private properties without prior notification of the property owners. Eskom maintenance personnel should be in possession of the required identification documents when undertaking maintenance work. Eskom personnel should behave properly at all times. Local labourers should be employed, where possible. Before construction commences, representatives from the CoCT and community leaders (e.g. councillors) and community-based organisations, should be informed of the details of the contractors, size of the workforce and construction schedules. Should a large number of temporary workers not form part of the local community members, the contractor should make certain that the "outside" workforce carry identification tags or uniforms to be easily identifiable. It should furthermore be ensured that the inflow of workers and their presence in the high density settlements do not create conflict within these surrounding communities. Local community organisations and policing forums / neighbourhood watches must be informed of the presence of an outside workforce (where relevant).	Eskom Project Manager, Contractor, EO, SO, ECO
7.	**Tender process**	The Final EMP will be included in the tender documents for contractors. The appointed Contractor should use local labour unless specific skills are required that are not available locally. The Contractor should indicate in the tender bidding process which skills are not available within the area.	Applicant

12.3.2 Environmental Specifications – Construction Activities – Pre – Construction

Pre - Construction			
Activity/Issue		**Action required**	**Responsible Party**
1.	**Effects of electromagnetism**	Eskom shall inform all affected parties of the potential effects of electromagnetism and corona noise during the land negotiation process.	Applicant
2.	**Relocation of people**	Eskom shall ensure all affected parties are informed of the requirement for relocation. Eskom shall ensure all parties who are due to be relocated are duly compensated. Should alternative accommodation be offered, Eskom shall ensure these are weather proof and have operating potable, grey and black water systems and electricity. In areas where resettlement would occur or where it cannot be avoided, a detailed Resettlement Action Plan (RAP) would have to be developed and detailed discussions with all stakeholders involved, such as the Department of Housing, CoCT, individuals to be resettled and host communities should be undertaken. It is anticipated the following tower localities may require the relocation of residents: • MS-C-16Ba, MS-C-16 Bb and MS-C-17A • MS-C-21 up to MS-C-23 • MS-C-26 and MS-C-27 • MS-D-25Bb • MS-D-24Be and MS-D-25Bc Consideration should be given to the types of towers to be used to minimise the footprint areas and to limit the negative visual intrusions, especially in the densely populated urban environments and places of important heritage and tourism value.	Applicant
3.	**Aesthetics**	Eskom shall identify and use least visually invasive pylons in areas prone to visual impacts.	
4.	**Timing of construction related activities**	The Contractor shall appoint the EO and SO prior to the commencement of works and their names shall be provided to the DEA 30 days prior to the commencement of construction related works. The Contractor shall be required to undertake activities within sensitive environments during periods when least impact is anticipated. The Contractor shall also be required to provide training to all personnel regarding the potential impact of construction related activities upon these environments.	Contractor
5.	**Defining works procedures**	The Contractor shall compile method statements for all activities / tasks to be undertaken during the implementation of the required works.	Contractor
6.	**Flora and Fauna**	The ECO shall be provided with a list of all known nesting sites. This shall form part of the Contractors pre construction survey.	
7.	**Pre-construction survey**	The pre-construction survey must be conducted per affected property prior to the commencement of the construction works. It must be attended by the Land owner (or designated representative), the ECO and the Contractor. The following must be established, agreed and recorded. • communication protocol for future communication between the parties (introduce all parties, roles and functions) • contact details • sensitive receptors immediately adjacent/close to the servitude. • activities usually undertaken in the construction servitude area, particularly in agricultural areas (e.g. typical depth of scarifying practices) • impacted services e.g. telephone, electricity, water supply lines and others, and the protection of these services • fire protection and fighting measures • fencing and gate requirements (any special requirements for special livestock, type of stock proof fencing, no of wire strands, location of gates, opening and closing of gates etc.) • interim access requirements to rivers and streams • security issues (traversing rights, collection of firewood, access to potable water, toilet facilities etc. will not be allowed on private properties by construction staff) Information and agreements to be captured in a document for each affected land portion (copy of which is to be submitted to the Eskom Project Manager): • Existing services, buildings and structures: Position, type, condition and other details of existing services (fencing, gates, roads, telephone lines, power lines etc), buildings and structures within the construction site including the pipeline servitudes. This survey must include photographical records, documented per cadastral portion. • Soil survey to determine soil profiles, water-holding capacity, soil chemistry and soil microbiology using a hand auger in collaboration with the Contractor's Specialist and ECO. Slope classes and terrain must also be documented. Land capabilities on agricultural land must be determined. • Access issues.	Contractor, EO, ECO, SO

Pre - Construction			
Activity/Issue		**Action required**	**Responsible Party**
8.	**Daily living and movement patterns**	Property owners that would be affected by the Transmission power line construction should be consulted prior to the construction phase with regards to the construction schedules, transportation routes, construction of additional access roads and construction methods to be used. Eskom should keep the construction of access roads to a minimum and rather use the existing infrastructure, as the construction and maintenance of these roads is very costly, impact on the residents' daily living and movement patterns, and create a potential for erosion. Rehabilitation of new access roads for construction vehicles should be undertaken as soon as the construction process allows. There should be strict adherence to speed limits when using local roads and when travelling through residential areas. Access routes and access points for heavy construction vehicles should be indicated to warn motorists of the movement of these vehicles. Limit the movement of construction vehicles to off-peak periods (where possible). Limit the movement of construction vehicles in areas where sensitive receptors are situated e.g. schools and pedestrians. Machinery and vehicles should be in good working order to limit excessive noise pollution. Construction activities must adhere to all relevant legislation. Construction activities should be limited to normal working hours and should preferably not be undertaken during weekends.	Eskom Project Manager, Contractor, EO, SO, ECO
9.	**Local economic benefits**	Local procurement should be aimed at local businesses as far as possible. Local sourcing of materials would assist in providing more economic and employment opportunities for the local people. Local procurement could result in indirect economic spin-offs and benefits such as increased income, and expansion of other local economic sectors. Maximise the use of local labour even if the number of locals that would be employed would be limited. Accommodate, but regulate the activities of vendors in the vicinity of the construction areas and at the construction camps.	Contractor
10.	**Training and induction of employees**	The Contractor must ensure that all people involved (including Sub-Contractors, casual labour, etc.) are aware of and familiar with the environmental requirements. The Contractor's EO is responsible for providing at least one hour of environmental training to each member of the construction staff. If required, further training may be conducted by the ECO. The Contractor's EO must monitor the performance of the construction staff to ensure that the training and induction have been understood and is being followed. Eskom, in conjunction with the contractors, should continue and extend HIV/AIDS awareness and support programmes amongst the contractors and sub-contractors.	Contractor, EO, ECO, SO

12.3.3 Environmental Specifications - Construction Activities - Site office establishment

Construction Activities – Site office Establishment			
Activity/Issue		**Action required**	**Responsible Party**
1.	**Construction site office/yard and site**	The Contractor will require a site office / yard for the duration of the contract period. The Contractor's site office shall be located within the development footprint, or on a site appropriately zoned and/or authorised for such use and approved by the ECO. The Contractor shall select a location that has easy access and which has already been cleared or disturbed by previous human activity (e.g. previous construction camps or stockpile areas). All construction activities, materials, equipment and personnel will be restricted to within the area specified. The site office / yard selected will minimise nuisance impacts on neighbours (e.g. visual intrusion, lights at night, noise, dust, movement of people and vehicles, safety and security risks). The perimeter will be clearly demarcated with fences to prevent site creep. The Contractor must fence off its construction camp areas with 1.8 m high diamond mesh fence. All temporary fencing must be removed on completion of the Contract. The camps may be used for the working hours activities of the Contractor's and the Employer's personnel and for all related facilities required by the Contractor and the Employer such as workshops, stores, testing laboratories, etc. The Contractor shall take all necessary steps required to comply fully with public legislation and regulation and all specification clauses governing the environment, health, transport, safety and public disturbance impacts. Accommodation of labour at camp sites will not be allowed. Should at any stage of the Contract the Employer and/or the Engineer be of the opinion that the camp sites of the Contractor is causing disturbance or inconvenience to land or lease owners or to nearby residents, then the authority granted by this clause for the Contractor may be withdrawn, either partially or entirely. The Contractor shall at all times conform to all requirements contained in law or bylaws, as well as any other requirements set by the controlling land and local authorities. The Contractor may not remove or damage any trees or shrubs on the site of the construction camps or depots without the permission of the Engineer and where required it shall be done in accordance with the environmental requirements. The Contractor shall water all access roads to construction camps and depots, as well as working areas used by vehicles inside camps, as required or as may be directed by the Engineer, to prevent dust being churned up by vehicles or wind. At completion of construction work the Contractor must break and remove all concrete slabs etc. in construction camps and at batching plants, remove to approved spoil sites only all rubble from camp sites and depots and hand over the sites in a clean and tidy condition. No Taking-Over-Certificate shall be issued for the Works unless the site cleaning is done to the satisfaction of the Engineer. Rehabilitation of impacted areas shall be done in accordance with the specifications included in EMP. The Contractor shall submit a method statement for the establishment of his camp site, including a drawing with the position, layout and type of facilities. <u>Accommodation of employees</u> The Contractor shall make his own arrangements to house his employees and to transport them to site. No accommodation at camp sites will be allowed. No informal housing or squatting will be allowed. All accommodation shall be within appropriately zoned areas within the urban fringe. The standard of the accommodation provided by the Contractor shall be subject to the approval of the Engineer. <u>Power supply, water and other services</u> The Contractor shall make his own arrangements regarding the supply of electrical power, water and all other services. No direct payment will be made for the provision of electricity, water and other services. The cost thereof shall be deemed to be included in the rates and amounts tendered for the various items of work for which these services are required, or in the Contractor's preliminary and general items. The Contractor will not obtain water from third parties without the permission of the Engineer. The Contractor shall pay all consumption charges, and at his cost provide all connections, consumption meters, pipe work, storage tanks, transformers, cables, transport and other items associated with the supply of water and electricity for the Works. All connections to services of a municipality (or its provider) shall be at points and to standards approved by the Engineer and the municipality or designated provider. During the construction of the Transmission power line, it is anticipated that satellite site offices may be required, which shall comprise a portable toilet, sheltered eating area and refuse bins. These should be no larger than 30m² and shall be approved by the Eskom Project Manager and ECO. The site office location shall have easy access and should preferably already be cleared or disturbed by previous human activity (e.g. previous construction camps, stockpile areas, parts of the existing road that forms part of the construction servitude or existing turning circles). All construction activities, materials, equipment and personnel will be restricted to within the area specified. <u>General</u> The Contractor will not be permitted to paint / mark or deface natural features in an attempt to demarcate the site. Hazard tape may not be used to demarcate the external boundaries, as this easily breaks, littering the surrounding environment. The satellite site offices may not be located within or near sensitive receiving environments, such as within 32m of the edge of the water course. Pre-construction photographs will be taken by the ECO to determine the condition of the site before construction begins. This will provide a benchmark for rehabilitation as rehabilitated areas must match the pre-disturbance state. The site office / yard and construction footprint will be kept clean, neat and tidy at all times, and all construction materials will be stored in a neat and organised manner. Workers are not to be accommodated on site. Security guards are to be provided for after hours. Residents close to the campsite office / yard shall be informed of the procedure for lodging complaints with regard to the Contractor's behaviour.	Contractor, EO, ECO

Construction Activities – Site office Establishment			
Activity/Issue		**Action required**	**Responsible Party**
		Local police services should be kept informed of the planned developments to ensure that they are able to adequately deal with any disruptive behaviour. All natural veld outside the development footprint should be marked as no-go areas during the construction. During periods when the construction area is far away from the construction camp, formal transport facilities would have to be arranged for these workers for those periods during the construction phase. Should construction start at the end of the year and construction activities be stopped for the festive season in December, the construction camp should not be left vacant to avoid security risks and possible unauthorised entry.	
2.	**Designated vehicle and plant cleaning and maintenance areas**	All vehicles and equipment requiring maintenance and servicing shall be taken off site and must be parked on an impermeable surface. Alternatively, drip trays must be placed below all vehicles / plant. Plastic sheets are not to be used as drip trays. Maintenance of vehicles may be done at the construction site office / yard. Leaking equipment shall be repaired immediately or removed from the site. Spills from such leaks or breakages (e.g. hydraulic pipe bursts etc) shall be reported to the Eskom Project Manager and treated immediately. Washing of vehicles may not be done at the construction site, and all vehicles requiring washing and servicing must be taken off site to a car wash / service station.	Contractor, EO, ECO

12.3.4 Environmental Specifications - Construction Activities - Site Management

Construction Activities Site Management			
Activity/Issue		**Action required**	**Responsible Party**
1.	**Aesthetics Management**		
	Aesthetics	The Contractor will ensure all components associated with site establishment are designed and positioned to limit the nuisance factor affecting surrounding land owners/users. All walls and roofs of buildings will be painted with a non reflective matt paint of which the colour will be approved by the Engineer. Lighting will be of a downward facing spill off type to a maximum height of 3 m and should be so positioned to provide adequate lighting for Health and Safety requirements, without being a nuisance to adjacent neighbours. No natural features may be defaced. Shade-cloth shall be placed on perimeter fencing to reduce visual impact of camp sites. Waste should be removed regularly to the Coastal Park landfill Site. Daily litter patrols must be conducted and record of these patrols kept. Bins must be provided at intervals agreed with the ECO within the camp and construction areas.	Contractor, EO, ECO, SO
	Visual intrusions	All portable toilets shall be screened from public view with a shade cloth enclosure.	Contractor, EO, ECO, SO
2.	**Dust Management**		
	Air quality	Vehicles and machinery will be maintained in good running condition. Stockpiles (e.g. soil) should be maintained for as short a time as possible and should be enclosed by wind-break enclosures of a similar height to the stockpile. Stockpiles should be situated as close as possible to the tower footprint for re use in rehabilitation and away from the site boundary, water resources and nearby receptors, and should take the predominant wind direction into account. During the transfer of material to stockpiles, the drop heights should be minimised to control the dispersion of materials. The Contractor will solely be responsible for the management and mitigation of dust generation. The Contractor shall routinely spray all dust-generating surfaces with water, a dust suppressing agent or similar substance to prevent dust generation. Potable and contaminated water will not be used as a dust-suppressing agent and only recycled and/or rain water is to be used, when available. All vehicles transporting material that can be blown off (e.g. soil and rubble) must be covered with a tarpaulin. Handling of soils is not to be conducted during winds in excess of 35 km/h.	Contractor, EO, ECO, SO
3.	**Earthworks Management**		
	Transport, earthmoving and materials handling equipment (TEM)	The Contractor shall ensure compliance with the Occupational Health and Safety Act and the relevant regulations for the operation and maintenance of TEM equipment. The Contractor shall ensure all TEM, vehicles and equipment are maintained in good working condition to maximise efficiency and minimise pollution. All TEM and other equipment shall only be washed in designated washing areas to minimise water pollution and soil contamination. The designated washing areas are to be located away from the river and wetland and its buffer zones. Soil / gravel material being transported to site by trucks will be covered to ensure that dust is not blown off the material. The Contractor shall inform all suppliers that all materials are appropriately secured to ensure safe passage to and from site.	Contractor, EO, ECO, SO
	Excavations and trenches	The Contractor must take all necessary precautions to prevent injuries or fatalities of people or animals occurring when working within excavations and trenches. The Contractor shall ensure all areas are adequately sign-posted and fenced, to prevent unauthorised access to the site. Trenches may not be left open during the builder's holidays. Safe trench-crossings shall be provided where required. When working in wet areas, the Contractor shall return the profile of the wetland/drainage line to one similar to the pre-construction profile. The majority of the flow of the water in wet areas must be allowed to pass down the stream (i.e. no damming must be allowed to take place). In-stream diversions should be used rather than the construction of new channels.	Contractor, EO, ECO, SO
4.	**Erosion Management**		
	Erosion	The Contractor shall be responsible for the prevention of erosion in areas impacted upon by their activities. All erosion repairs must be implemented at the first signs thereof. The Contractor must present the site in an erosion-free state before the issuing of the Performance Certificate.	Contractor, EO, ECO, SO
5.	**Fauna and Flora Management**		
	Flora and fauna	The ECO must be informed of all animals found on site in order to ensure proper capture, translocation and release. Trapping, collection, poisoning and/or shooting of any animals by construction personnel is forbidden. The Contractor shall not keep domesticated animals on site and shall take every possible precaution to prevent domesticated animals belonging to I&APs from entering the site. Permits must be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) prior to the removal and pruning of or damage to any nationally protected trees. A comprehensive alien vegetation eradication programme must be implemented, with the removal of all alien vegetation from within the servitude / development footprint (as legally required). Care must be taken during the alien vegetation removal process to ensure that no unnecessary fires are created through the stacking of biomass. Imported materials must be free of alien vegetation species. Rehabilitation of areas disturbed during project activities (and other rehabilitation or replanting as may be specified) shall be undertaken to reinstate natural flora and prevent the expansion of weeds and invasive alien species. All material brought in must be from a reliable source and free of alien seeds or grass runners. The Contractor shall ensure all areas rehabilitated are kept weed free during the defects notification period.	Contractor, EO, ECO, SO

Construction Activities Site Management				
Activity/Issue		**Action required**		**Responsible Party**
		To avoid avi-faunal impacts with the Transmission power line, the Contractor shall install bird guards (at isolator localities) and bird diverters (on earth wires) at all localities identified by the avi-faunal specialist. Construction crews shall be notified of nests on adjacent lines and be made aware of potential negative impacts associated with the construction related activities. The South Western Cape Raptor Project of the Endangered Wildlife Trust shall be notified of these nests.		
	Vermin	The site must be kept clean and tidy at all times to ensure no vermin is attracted to it. The use of pesticides is prohibited unless approved through the submission of a Method Statement to the Eskom Project Manager and ECO.		Contractor, EO, ECO, SO
	Environmental Auditing	During construction, activities will be monitored and recorded by the EO and audited against the EMP by the independent ECO. Monitoring and incident information will be communicated to the relevant authorities. Any complaints will be recorded and investigated. After construction, the site needs to be inspected and monitored to ensure that the rehabilitation activities have been successful and are maintained.		Contractor, EO, ECO, SO
	Bird Diverters	The sections of the proposed power line to be marked with Bird Flight Diverters (BFD's) must have them placed on both earth wires, 10 metres apart, staggered, alternating black and white. The recommended diverter is the Double Loop Bird Flight Diverter. • MS-C-32 to MS-C-35B • MS-C-35B to MS-D-18Ba • MS-D-47 to MS-D-48		Contractor, EO, ECO
	Ecologically sensitive areas	A detailed site-specific survey of the pylon positions by an experienced Fynbos botanist during the optimum season (August-Setember) to identify potential occurrences of threatened plant species. If existing access roads are present, these must be used during construction to minimise the construction of new roads. Construction in all ecologically sensitive areas should be undertaken in the dry season (October-April), where possible, in order to minimse damage to seasonal vegetation and to reduce the chances of erosion and wetland sedimentation. Disturbance footprints for pylons in sensitive areas should be minimised to 10m × 10m (100m^2). All areas of natural vegetation outside the immediate construction footprints must be regarded as no-go areas. These areas may not be accessed by people or vehicles. No ancillary activity, such as temporary housing, temporary ablution, storing of equipment or waste disposal may be permitted in the areas mapped or classified as ecologically sensitive. Due to the extreme sensitivity of the remaining natural vegetation along these route alignments it is recommended that these parts of the selected route be rehabilitated and maintained as conservation areas, as suggested by Section 8 of the Eskom Transmission Vegetation Management Guideline Document (2006). If the power line servitude is revegetated with appropriate fynbos species and alien invasive vegetation is minimised and well managed, the servitudes could provide valuable ecological corridors, connecting important fragments of natural vegetation. However, it is recognised that Eskom is unlikely to engage in Fynbos rehabilitation as this is not their core business, and more feasible recommendations are made below. • All servitudes should be cleared of woody invasive alien vegetation on an annual basis, using appropriate methodology. Appropriate methodology does not mean sending in a "bossieslaaner" tractor, as this causes many woody alien species to re-sprout vigorously. Work should be undertaken by well-trained teams who are familiar with the DWA approved alien clearing methodology. All woody alien invasive vegetation in the servitudes should be cut as close to ground level as possible, using hand tools or chainsaws, and the cut stumps must be hand painted with an appropriate Triclopyr herbicide (containing a dye so treated stumps can be seen) within ten minutes of felling, in order to prevent re-sprouting. Felled material should be stacked in a pyramid, with cut ends facing upwards, or removed from site, or chipped. Small seedlings may be hand pulled. No herbicide should be sprayed unless alien vegetation cover is greater than 80%, and then only under appropriate conditions (no wind or rain), as collateral damage of non- target plants may be significant. Identified ecologically sensitive areas should not be brushcut, as this encourages alien vegetation and damages the remaining Fynbos, effectively increasing the fire threat rather than reducing it, which is the usual reason for brushcutting of servitudes. Brushcutting in areas that have no sensitive wetlands or natural vegetation should not be a problem Operational access tracks should not be created in areas mapped as being ecologically sensitive, and existing tracks used during the construction phase should instead be used. The creation of tracks should be minimised throughout servitudes.		Contractor, EO, ECO, SO
	Ecologically sensitive pylon positions	• MS-C-8B • MS-C-14 • MS-C-15 • MS-C-30Ba & b • MS-C-31 • MS-C-33 • MS-C-35B • MS-C-12Ba & b • MS-C-13a	• MS-D-1Bb • MS-D-3 • MS-D-35 • MS-D-36 • MS-D-37 • MS-D-39 • MS-D-40 • MS-D-41B • MS-D-42B	Contractor, EO, ECO, SO

Construction Activities Site Management			
Activity/Issue		**Action required**	**Responsible Party**
		• MS-C-14Ba & b • MS-C-15b • MS-C-21a & b • MS-C-22 • MS-C-23b & c • MS-C-Gantry 3a • MS-D-43 • MS-D-44	
6.	**Fire and Emergency Management**		
	Safety and Security	Construction property and equipment are to be clearly marked with identification tags. Access to the construction site must be restricted and guarded. Construction workers will wear clothing marked with the logo of the construction company and will carry identification cards. The Contractor will maintain a consistent workforce that is familiar with the rules, practices and attitudes towards the misappropriation of property. Personal protective equipment (PPE) and clothing shall be given to workers and the usage thereof shall be enforced to avoid construction-related accidents. The Contractor shall implement measures to ensure the safety of pedestrians crossing the roads used by construction vehicles. Potential hazardous areas must be demarcated and clearly marked. No unauthorised firearms or dangerous weapons are permitted on site.	Contractor, EO, ECO, SO
	Health Risks	A Health and Safety Officer is to be appointed for the duration of the construction period, and his contact details are to be made available to the adjacent land owners and the ECO. The Contractor shall provide awareness campaigns addressing the risk of the spread of HIV/Aids. Adequate water supply and sanitation-related facilities shall be provided to the workers at the construction sites. This shall typically include 1 toilet to every 15 workers. The toilets shall be located no more than 50 m away from any work front. Emergency response processes should be in place, and communities and adjacent land owners along the pipelines should be notified of the correct procedures for dealing with serious emergencies. Eskom, in conjunction with the contractors, should continue and extend HIV/AIDS awareness and support programmes amongst the contractors and sub-contractors. Adequate water supply and sanitation related facilities should be provided to the workers at the construction sites. Local labour should be employed as far as possible to avoid additional pressure of outsiders on the existing services. Construction waste should be disposed of properly to prevent any surface and groundwater pollution. Construction sites should be fenced off to avoid unauthorised entry by individuals and animals. Eskom should take a strong stance with regards to the illegal squatting within the servitude areas. For safety reasons these dwellers should be moved out of the servitude areas on an ongoing basis	Contractor, H&S Officer
	Environmental emergency response	In the event of actions that may result in significant environmental damage, an environmental emergency response plan must be in place to limit the extent of environmental damage. Procedures and policies will be established to ensure that an incident does not recur. Incidents will be reported immediately to the responsible person. All incidents will be documented in the environmental incident book. The relevant authority will be informed after an incident.	Contractor, EO, ECO, SO
	Incident management	The Contractor shall identify the types of environmental incidents that are likely to occur on site and ensure measures are put in place to prevent or mitigate the effects of such incidents. The Contractor is required to put in place an effective management system that will prevent or mitigate the occurrence of an incident. The method statement for this must be submitted to the Engineer for approval prior to the commencement of the works. This method statement must be reviewed and updated on a six monthly basis. All the SHE incidents must be reported to the Contractor. The Contractor shall immediately report the incident to the Eskom Project Manager and put into place management mechanisms to deal with the incident as quickly as possible. A formal report must be submitted within seven days to the Eskom Project Manager, including all remediation measures undertaken to repair any damage caused and to prevent the incident from re occurring. Once the incident has been stabilised and initial notifications have been issued to the relevant parties, a full incident investigation is required complete with detailed corrective and preventative measures. The Contractor is required to provide an incident report to the Eskom Project Manager, which, as a minimum, must include the following: • Nature of incident. • Damages, injuries or fatalities sustained and the parties involved. • Any risks such incident poses. • Toxicity of the substances involved. • Steps taken to avoid or minimise the effects of the incident and any future incidents. • Clean-up procedures, remedial actions and assessment of immediate and long term effects.	Contractor, EO, ECO, SO

Construction Activities Site Management			
Activity/Issue		**Action required**	**Responsible Party**
	Fire management	The Contractor shall prepare and implement a Fire Management Method Statement to reduce fire-associated risk and thereby maintain a safe working environment and reduce negative impacts on the natural and social environment. This method statement shall be cognisant of the requirements as contained within the Eskom documents of Table 13. The Contractor shall prepare the Fire Management Method Statement for approval by the Engineer within the first month of site establishment. The method statement is to include the following as a minimum: • Measures to reduce the risk of fires starting and spreading. • Details on how the Contractor is to manage and control fires during construction. • Fire prevention equipment and where it will be located • The format and means for recording and reporting on fire mitigation, management and monitoring. The Contractor will, ultimately, be responsible for fires that break out as a result of his activities during the implementation of the project, as well as the containment thereof. The Employer's liability with regards to fire is transferred to the Contractor for the duration of the Contract. The Contractor shall take reasonable measures to reduce the risk of fires during construction. The Contractor shall limit the risk of fires through a combination of the methods below: • The Contractor shall assign the position of Fire Officer to one of its staff members who is competent and adequately trained to fulfil the position of Fire Officer. The Fire Officer shall be responsible for ensuring immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedures to be followed. • All perimeter boundaries adjoining neighbouring properties must have fire breaks in place. The fire break width maintenance requirements and responsibilities will be determined by the Contractor in conjunction with the land owner. Fire breaks shall be monitored by a Professional Services Provider or by the local Fire Protection Association. The fire management method statement must include but not be limited to the following: o A list of the major workplace fire hazards o Proper handling and storage procedures, o Potential ignition sources (such as welding and smoking), o Control procedures, and o Type of fire protection equipment or systems to be used for control. • The current Fire Danger Index shall be displayed prominently on site at all times. • All staff shall receive training on fire hazards as a part of the site induction training by the Contractor before commencing work on the site. • Suitable fire fighting resources must be placed at all fronts. The Contractor shall ensure compliance with the Occupational Health and Safety Act and the relevant regulations regarding fire-fighting equipment. In the event of a fire on site, the Contractor shall mobilise all nearby personnel and do everything possible to extinguish or contain the fire until the CoCT Fire Brigade arrive. Proof of construction workers training on fire hazards and fire fighting is to be kept on file and shown to the ECO on request. Any fires that occur shall be reported upon discovery to the Eskom Project Manager and to the relevant authority. No open fires shall be permitted on or off the site or for the preparation of meals within designated eating areas. No on-site burning of waste materials, litter or refuse shall be permitted. Smoking shall not be permitted on site, except in designated smoking areas. Designated smoking areas are not to include those areas where there is a fire hazard. Fire hazard areas include the workshop and fuel storage areas and any areas where the material supports the rapid spread of an initial flame. The Contractor shall be required to monitor the following on an ongoing basis: • Regular drills, at least twice per year, should be performed to ensure adequate response by all Contractors' staff. • Annual revision of Fire Management Method Statement.	Contractor, EO, ECO, SO
7.	**Hazardous Substance Management**		
	Cement / concrete mixing	The Contractor will submit a Method Statement for the mixing of cementitious and related products, and this must include remedial actions for spillages of cement and concrete, the cleaning of concrete mixers / truck-mounted cement mixers, recycling of cementitious products and management and the disposal of waste / spoil. Used cement bags shall be disposed of in weatherproof bins on site to prevent the generation of windblown cement dust and to prevent the bags from blowing away. During construction, the Contractor(s) must ensure that concrete is mixed in appropriate structures to prevent the contamination of the surrounding environment. All visible remains are to be removed and disposed of as waste and all surplus material is to be removed. Plastic sheets and the bare ground are not to be used for mixing purposes. Inert concrete can be disposed of at the registered Coastal Park Landfill Site only after approval has been obtained from the Eskom Project Manager. Waste manifests must be obtained by the Contractor for the disposal of inert concrete to a registered waste landfill site. All visible remains of excess concrete shall be physically removed and disposed of on completion of construction. Concrete spoil from foundation pours, shall not be discarded into the surrounding environment. Excess concrete and wash water from the concrete truck's drum shall be placed within the foundation's selected back fill.	Contractor, EO, ECO
	Chemical spill control	If a spill of any kind occurs, corrective action will be taken (notification of incident, isolation of contaminated material and safe disposal).	Eskom Project Manager, Contractor, EO, SO and

Construction Activities Site Management			
Activity/Issue		**Action required**	**Responsible Party**
		Spills shall be controlled with the following actions: • Method statements will be developed for potential hydrocarbon and chemical spill incidents. • Spillage control will be provided by impervious bunding or collecting spills to a sump for disposal or controlling by absorbent material on standby. • Capacity of impervious bund structures should be 110% of the capacity of the largest tank within the bund structure. • Spill containment facilities, such as impermeable or lined bunds (concrete is not impermeable) or drip trays will be provided in oil and chemical storage sites and vehicle maintenance areas. • Material from lined bunded areas will not be buried during rehabilitation. • Re-fuelling and handling of chemicals will occur only in a designated area. • Spill kits will be available on site and staff will be trained in their use. • The spill will immediately be cleaned up and disposed of at a registered hazardous waste landfill site. • All spills and actions will be reported in the site Environmental Incident Book. • Where cement powder has been spilled onto the bare soil, the contaminated soil shall be removed, placed into an appropriate container and disposed of at a registered hazardous landfill site. • Leakages must be repaired on mobile equipment and containment / drip trays must be placed underneath immobile equipment until the leakage has been repaired. The drip tray will have a small spill sock placed in it to capture small spills. • All generators will be permanently placed on drip trays to contain any spillages that may occur. • A spill response team should be brought onto the site to clean the affected area in the event of a spill greater than 100 litres.	ECO
	Chemical storage	Hazardous materials include diesel, petroleum, oil, cement, bentonite, solvent-based paints, drilling fluids, pesticides, herbicides and LPG. All chemicals will be stored in specifically designed, lockable and lined storage areas where reactive substances are classed and segregated. All hazardous substances must be stored in a lined bunded area and sufficient spill absorbent material must be provided for the type of hazardous substance stored. The chemicals will not be stored within 100 meters of water courses. The chemicals will be labelled according to the chemical hazard rating and, as such, adequate signage must be displayed indicating the appropriate management measures to be implemented in the event of a spill / fire. Material Safety Data Sheets of chemicals used must be kept on file on site at all times. The Contractor must use the least environmentally harmful chemical in undertaking specific duties / requirements. Storage of diesel / petrol in excess of 200 litres requires approval from the CoCT Metropolitan Fire Chief.	Contractor, EO, ECO
8.	**Heritage Management**		
	Heritage resources/human remains	The Contractor and workers should be notified that archaeological finds may be exposed during the construction work. Should a find of heritage importance be unearthed, construction activities will stop immediately at the site of discovery. The area will be fenced off with a radius of 20m around the unearthed item, demarcated as a no-go area and access will be prohibited. Should there a risk of the find being violated, whether intentionally or inadvertently, the Contractor shall be required to appoint a guard to enforce the no-go area policy. The ECO and Eskom Project Manager shall be notified immediately. The ECO will contact an archaeologist to undertake further studies and determine the importance of such a find. All related activities will be undertaken by the archaeologist, or under his/her supervision, to ensure no unnecessary damage takes place on the site. During this period, work will not take place in the demarcated area. Work will be continued further along the site at a distance which is clearly well out of the area that may be affected by the findings. Should the findings be clearly limited to a particular area the ECO and Eskom Project Manager, in consultation with the archaeologist, will be free to determine what can reasonably be deemed a safe no-work distance, which will be kept clear of activities. Work will only recommence on the written consent of the archaeologist and/or the Heritage Western Cape. Finds containing human remains shall immediately be reported by the Eskom Project Manager to the South African Police Services (SAPS). All parties concerned shall respect the potentially sensitive and confidential nature of the heritage resource, particularly human remains. Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on site. The Contractor and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or paleontological artefacts, as set out in Section 51(1) of the NHRA. Any extension to the project footprint shall require assessment by a qualified heritage practitioner prior to commencement of works.	Contractor, EO, ECO, SO
9.	**Infrastructure Management**		
	Storage facilities	The Contractor will provide storage facilities for equipment, plant and materials in such a way as to prevent damage to either the environment or to the stored item. Such items stored will be in a damp and weatherproof, well ventilated and bunded facility that is raised sufficiently above ground level to prevent the ingress of storm water. All chemicals, lubricants and fuels will be stored in secondary containment units that are capable of storing 110% of the contents stored. These secondary containment units will be impermeable, fire proof and constructed to approvals as obtained from the Eskom Project Manager.	Contractor, EO, ECO
	Eating areas	The Contractor shall provide staff with suitable eating areas that are weatherproof and away from construction related nuisance e.g. dust and noise. These designated eating areas must be for normal working hours only. The Contractor is to provide refuse bins and lids which are cleaned on a daily basis. The Contractor must ensure staff do not leave food items laying around after breaks. The Contractor	Contractor, EO, ECO, SO

Construction Activities Site Management			
Activity/Issue		**Action required**	**Responsible Party**
		shall ensure a dedicated cleaning function at the eating areas after every meal. Fires will not be allowed anywhere in construction and associated project areas.	
	Lay-down areas	The Contractor shall set aside suitably sized areas for the storing of pipes and associated materials. These areas must have a firm substratum and adequate drainage to ensure rapid drying out of the areas. The Contractor shall be responsible for keeping all areas of the site for which he is responsible in a neat, clean, sanitary and orderly condition in accordance with the specifications.	Contractor, EO, ECO, SO
	Temporary site closure	In the event of temporary site closure (e.g. during pay weekends and annual shutdown period), the Contractor shall check the site, ensure that the following conditions pertain and report on compliance with this clause: <u>Fuels / flammables / hazardous materials stores</u> • Every effort should be made to ensure that fuel stores are as low in volume as practicable. • There are no leaks. • The outlet is secure and locked. • The bund is empty. • Fire extinguishers are serviced and accessible. • The area is secure from accidental damage through vehicle collision and the like. • Emergency and contact numbers are available and displayed. • There is adequate ventilation in enclosed spaces. • There are no stores or containers within the 1:100 year flood line. <u>Erosion</u> • Wind and dust mitigation measures such as brush packs, irrigation are in place. • Excavated and filled slopes and stockpiles are at a stable angle and capable of accommodating normal expected water flows. • There are sufficient detention ponds or channels in place. <u>Water contamination and pollution</u> • Hazardous fuel stores are secure. • Cement and materials stores are secure. • Toilets are empty and secured. • Refuse bins are empty and secured. • Bunding is clean and treated with appropriate material that will absorb/ breakdown and where possible be designed to encapsulate minor hydrocarbon spillage. • Drip trays are empty and secure.	Contractor, EO, ECO, SO
	Fencing at foundation sites	The Contractor shall ensure all foundation excavations are adequately secured at the close of work each day. Fences capable of keeping livestock, domesticated animals and people out shall be used. These fences shall be clearly demarcated with safety mesh – no hazard tape or netting may be used. The Contractor shall remove all temporary fencing upon completion of works.	
	Sourcing of materials	Commercial sources for concrete will be used. Permits received from suppliers must be kept at the construction camp office.	Contractor, EO, ECO

Construction Activities Site Management			
Activity/Issue		**Action required**	**Responsible Party**
	Sub station expansion	The Contractor shall ensure the site is kept visually and aesthetically pleasing during construction works. The site shall be screened from public view using shade clothe or similar of a matt earth toned colour. The Contractor shall implement measures to ensure dust generation from site clearing operations do not impact upon the surrounding community and environment. The Contractor shall undertake all earthworks operations during the dry summer months to avoid contamination of runoff water leaving the site. The Contractor shall undertake all works in a manner which prevents the ingress of water onto the site and implementing measures to stabilise the soil thereby decreasing the incidence of erosion. The Contractor shall undertake a search and rescue operation of the site prior to the commencement of site clearance activities. All flora and fauna of conservation worthy status shall be removed and relocated to a site as identified by the ECO. The Contractor shall implement measures and undertake his operations in a manner which does not pose a fire threat. The Contractor shall ensure the storage of transformer oil is undertaken within secure impermeable bunds for the duration it is stored on site. The Contractor shall ensure adequate fire fighting and spill preventative and containment measures are in place. The design for the upgrading of the transformer oil holding facilitates at Philippi substation shall be approved by the ECO prior to the commencement of construction related works. The Contractor shall be aware that chance finds may be made during construction related activities. The Contractor shall implement measures to mitigate the damage or removal of these chance finds should they be discovered. The Contractor shall ensure all works undertaken at the substation are not impacting upon neighbouring communities and the environment. The Contractor shall ensure measures are in place to manage and mitigate concerns and complaints raised by I&AP's and the surrounding community. The Contractor shall implement measures to mitigate and manage against construction related noise generation impacting upon the surrounding environment. The Contractor shall implement measures to re-use natural resources identified on the substation footprint for rehabilitation purposes elsewhere on the project. The Contractor shall ensure topsoil stockpiles are protected and kept separate from other contaminants. The Contractor shall ensure works within the substation precinct do not impact upon the traffic flow in A.Z. Burmann Road. The Contractor shall also ensure that entrained soils / mud from vehicles exiting site, do not impact upon the roads. The Contractor shall be required to keep the road in front of the substation free from any such deposits. The Contractor shall implement training programmes for all levels of staff to ensure all works undertaken are done in a manner which complies with the requirements of the environmental authorisation and the EMP. The Contractor shall institute effective waste management measures on site. This shall entail waste reduction, re-use and recycling. The Contractor shall ensure all general waste is taken to the Coastal Park landfill Site and all hazardous waste taken to the Vissershok landfill site. The Contractor shall ensure waste generated on site does not litter the surrounding environment. The Contractor shall ensure natural drainage channels are instated.	
10.	**Land Use**		
	I&APs relations	The Contractor shall erect and maintain information boards in the position, quantity, design and dimensions specified by the Eskom Project Manager. Such boards shall include general information of the activity and contact details for complaints by I&APs in accordance with details provided by the Eskom Project Manager. The Social Officer is to liaise with the Community with regard to comments and queries by I&APs.	Contractor, ECO, SO
	Landowner interactions	Interactions with landowners, local communities and other affected parties need to be done by the Contractor's Social Officer. All interactions with Landowners/Residents must be recorded in a Communications Register, which shall be made available to the Eskom Project Manager on a monthly basis. The Contractor shall respect the property and rights of landowners and communities at all times and shall treat all such persons with courtesy. The Contractor shall keep records of all communication in a Property File for each property. The Contractor shall ensure disruptions to Land owners/Residents and I&APs affected shall be minimised.	Contractor, ECO, SO

Construction Activities Site Management			
Activity/Issue		**Action required**	**Responsible Party**
		The Contractor shall ensure private property adjoining the site is not damaged due to construction related activities. Access to and from private property shall also not be affected by construction related activities. The Contractor shall absolve the Eskom Project Manager of any and all risk and liability in this regard. Prior to property access, the Social Officer will arrange a meeting between the Contractor, Landowner/Resident and the ECO. This meeting will be held on the property affected and is aimed at determining Landowner/Resident, Contractor, Environmental and Social requirements. Aspects identified in the specifications for the pre-construction survey must be recorded. In addition, the Fencing Act (Act 63 of 1963) regulates activities associated with fencing and gates. Therefore, in terms of this Act, it is critical for the Contractor and the Land owner to agree on fences and gates that need dismantling/erection. Where existing fences have to be dismantled and re-erected, they shall be erected to the same design as the original and to the satisfaction of the landowner, but with such modifications as may be required by the Eskom Project Manager. All incidents occurring during the completion of the Contractors duties shall be reported to the Eskom Project Manager in writing, by the Contractor. The Eskom Project Manager will then assess the incident, concern or claim with the assistance of the ECO and determine the compensation/corrective action required by the Contractor. The Contractor will take all actions required to ensure no re-occurrence of the incident/claim or concern occurs again. The Contractor shall adhere to the timeframes for dealing with Land owner/I&AP concerns below: • Record concern in the Communications Register and verbally notify the ECO – immediate. • Respond to the concern – within 1 day of concern being raised. • Rectify/mitigate concern – within 3 days of concern being raised. • Respond in writing on “close out” of concern – within 5 days of concern being raised. • Submit to the Engineer a detailed report – within 7 days of concern being raised.	
	Communications Register	All complaints received will be investigated and a response given to the complainant within 10 days. Complaints and positive feedback received from I&APs must be recorded in the Communications Register. The complaint will be brought to the attention of the Eskom Project Manager, who will respond accordingly.	Eskom Project Manager, Contractor, EO, SO, ECO
	Inflow of workers	Maximise the use of local labour and contractors where possible by developing a strategy to involve local labour in the construction process The recruitment process and the use of contractors should be clearly communicated to the local communities The communication strategy should ensure that unrealistic employment expectations are not created. A representative of Eskom could liaise with the local councillors to either attend key community meetings arranged within the various wards to discuss the employment and recruitment process; or liaise with the local councillors to ensure that the correct information regarding this issue is portrayed to the communities via the councillors. Eskom personnel should preferably not access private properties without prior notification of the property owners. Eskom maintenance personnel should be in possession of the required identification documents when undertaking maintenance work. Eskom personnel should behave properly at all times. Local labourers should be employed, where possible. Before construction commences, representatives from the CoCT and community leaders (e.g. councillors) and community-based organisations, should be informed of the details of the contractors, size of the workforce and construction schedules. Should a large number of temporary workers not form part of the local community members, the contractor should make certain that the “outside” workforce carry identification tags or uniforms to be easily identifiable. It should furthermore be ensured that the inflow of workers and their presence in the high density settlements do not create conflict within these surrounding communities. Local community organisations and policing forums / neighbourhood watches must be informed of the presence of an outside workforce (where relevant).	Eskom Project Manager, Contractor, EO, SO, ECO
	Safety and security	The movement of construction vehicles through the local communities should be limited to off-peak periods (if possible) to minimise adverse impacts on the movement of pedestrians (schoolchildren and individuals walking to and from work) and to a lesser extent on private vehicular traffic. Signs must be erected at strategic locations throughout the area, warning residents and visitors about the hazards around the construction site and the presence of heavy vehicles. Employing local community members could minimise the potential for criminal activity or perceived perception of an increase in criminal activity due to the presence of an outside workforce. Screening of workers that apply for work could be useful to lessen perceived negative perceptions about the outside workforce. The servitude management should be monitored on an ongoing basis. Eskom should take a strong stance with regards to the illegal squatting within the servitude areas. For safety reasons these dwellers should be moved out of the servitude areas on an ongoing basis. Eskom should, in conjunction with the CoCT, develop an emergency management plan to specifically deal with the increased risk of fires.	Eskom Project Manager, Contractor, EO, SO, ECO
11.	**Noise Management**		
	Noise	Noise sources include construction machinery, power tools and compressors, vehicle movements, general construction activity and drilling. To limit noise levels, the following actions will be taken: Vehicles and machinery will be kept in good working order and equipped with silencers. Noisy activities will only be undertaken only during normal working hours: 07h00 to 18h00 on weekdays, Saturdays from 07h00 to 13h00 and no work on Sundays or public holidays. Work may not be conducted outside this period without the written authorisation of the Eskom Project Manager.	Contractor, EO, ECO, SO

Construction Activities Site Management			
Activity/Issue		**Action required**	**Responsible Party**
		The speed of delivery and construction vehicles in construction areas will be limited to 25km/h. Any complaints will be investigated and corrective action implemented and documented.	
12.	**Rehabilitation Plan**		
	Rehabilitation	See Environmental Specifications - Rehabilitation Activities.	
13.	**Soil Management**		
	Soil management	Compaction by vehicles or poor storage methodology or careless handling of topsoil can cause erosion or contamination. The objective is to prevent compaction and the loss of soil structure, the following soil handling techniques shall be employed: Soil stockpiles should not be higher than 1m with slopes of 1m vertical to 2,5m horizontal Soil will not be handled during windy conditions (else it will be dampened to reduce dust production) All stripped soil will be stockpiled for use in rehabilitation The soil will be stockpiled: • at a sheltered site protected from wind erosion; • outside the working area where it will not be compacted by traffic; • away from the wetland and other water resources so there is no risk of wash-away; and • to promote runoff, soil stockpiles will be rounded off (convex) at the top. Repeated handling of soil will be avoided. Overburden must be removed and stockpiled separately from topsoil stockpiles. Overburden stockpiles may not be permitted to overflow and contaminate topsoil stockpiles. All polluted soils shall be replaced by the Contractor(s) at his own cost.	Contractor, EO, ECO
	Agriculture	Adding organic matter and fertiliser to the sandy soils can often make them productive. Farming practices can still continue within the power line servitudes in between the pylon positions. The maximum operational height under the conductors is 5.5 metres. Line alignments should take the position of sprinkler irrigation systems into consideration to ensure that these areas are avoided. Eskom should select tower types and construction approaches to have the minimum impact on agricultural practices. Noise and dust should be kept to a minimum. Eskom should keep the construction of access roads to a minimum and rather use the existing infrastructure, as the construction and maintenance of these roads is very costly, impact on the residents' daily living and movement patterns, and create a potential for erosion. Rehabilitation of new access roads for construction vehicles should be undertaken as soon as the construction process allows. Placement of the towers should be carefully planned to limit any possible negative impacts on the farming activities of any one small holding in the Philippi area. Should any of the towers negatively impact on the agricultural production capacity of a specific property, it should be calculated and taken into consideration when compensation is negotiated. Tower positions should, where possible, be placed on the borders of properties.	Contractor, EO, ECO, SO
	Spoil	Excess material obtained from the foundation footprint, shall be spoilt off site at the registered Coastal Park Landfill site.	Contractor, EO, ECO, SO
14.	**Traffic Management**		
	Traffic management	The Contractor shall provide safe points for pedestrian and vehicular crossing at designated points. These points will be "stop-and-go" systems manned by flag persons. Orange safety fencing / netting must be utilised by the Contractor to keep pedestrians away from the construction work area. Danger tape must not be used, as this breaks easily and could litter the surrounding environment. Appropriate notification signs shall be erected by the Contractor at entrances to the construction site to warn visitors and pedestrians about the hazards around the construction site and the presence of heavy vehicles, where appropriate. Construction vehicles are to keep to the speed limits (25km/h on the construction site).	Contractor, EO, ECO, SO
	Access	Residents shall be allowed access to their properties at all times. In cases where residents have no vehicular access to their properties, safe parking shall be arranged. All access roads for construction vehicles shall be properly rehabilitated. Advertising boards displaying road safety messages focused on pedestrians shall be erected. Proactive warning signs shall be erected in the case of traffic disruption or diversion and along access roads. Existing tracks and roads shall be used. Due to the requirement of placing poles in new localities, access to these sites shall be required. The Contractor shall identify a suitable route and ensure all vehicular access follows that route. This route shall be the shortest and most direct route with the least impact upon sensitive environments. These routes shall not be cleared and grubbed with the natural vegetation remaining *in situ*. No new access roads shall be constructed in wetlands and through rivers or with the respective 1:100 year flood line. Helicopters should be used to erect towers in sensitive	Contractor, EO, ECO, SO

Construction Activities Site Management			
Activity/Issue		**Action required**	**Responsible Party**
		areas.	
15.	**Training Programmes**		
	Construction personnel information posters	The Contractor shall erect and maintain information posters for the information of his employees depicting actions to be taken to ensure compliance with aspects of the EMP. Such posters shall be erected at the site access area, eating areas, and any other locations specified by the Eskom Project Manager.	Contractor, EO, ECO, SO
16.	**Waste Management**		
	Waste management	A waste sorting facility will be established at the construction site office / yard. Solid waste will be separated into recyclable and non-recyclable waste. Timber, metal, oil, paper, bricks, tyres, batteries and any other major recyclable wastes will be stored in safe, secure areas prior to disposal. Proof of disposal must be kept on file and presented to the ECO on request. General non-recyclable refuse will be collected in appropriate bins with secure lids to be disposed of at the registered Coastal Park Landfill Site or at the nearest transfer station with capacity to accept the waste generated by the project. Proof of disposal must be kept on file and presented to the ECO on request. The Contractor will provide weather- and vermin-proof bins, which shall be cleaned on a daily basis. The Contractor must ensure that staff do not leave food lying around after breaks. A separate oil container will be used to ensure that oil wastes are contained. All chemical drums will be transported to a designated and lined bunded area when full, empty or when the contents of the drum are unusable or unknown. All drums will be appropriately disposed of at a registered hazardous waste landfill site. Proof of disposal must be kept on file and presented to the ECO on request. No burning, burying or dumping of any solid waste materials will be permitted on site. The Contractor will supply temporary ablution facilities (e.g. non-chemical or composting toilets) of an acceptable standard, with a minimum of one facility per 15 workers. The use of the surrounding areas for ablutions is strictly prohibited. The temporary ablution facilities will be monitored on a regular basis to ensure that the toilets are cleaned and emptied on a regular basis. The temporary ablution facilities will be secured to the ground to prevent them from being blown over in high winds. Ablution facilities should be placed within 50m of work areas.	Contractor, EO, ECO
17.	**Water Management**		
	Surface and groundwater	Construction activities should take place during the dry season to reduce the risk of contamination through runoff. Storm water runoff must be prevented from coming into contact with waste or contaminants on the site. Discharge of effluents or polluted water into the water resources shall not be allowed. All TEM shall be refuelled off-site. Water emanating from the mixing of cementitious products must be contained and prevented from entering the environment. The Contractor shall prevent the discharge of any pollutants, such as bentonite, cements, concrete, lime, chemicals and fuels into any water resource. High levels of safety need to be applied to the construction of the pipeline so that groundwater quality is not negatively impacted. Water released by the Contractor into the environment must comply with the attached DWA water standards (Refer to Annexure B).	Contractor, EO, ECO
	Natural Drainage	The Contractor shall ensure all works undertaken do not negatively impact upon drainage lines, either natural or man-made. Should the Contractor be required undertake works and impact upon a drainage line, the ECO shall be notified and the requirement discussed with the affected landowner. The Contractor shall be required to make good on all damage upon completion of construction related works.	Contractor
	Health and safety	Adequate water supply and sanitation related facilities should be provided to the workers at the construction sites.	Contractor

12.3.5 Environmental Specifications – Tower Specific

The following formula has been used to determine the Level of Significance:

Significance = (Scale + Duration + Intensity) × Probability

Each pylon position was assigned a rating that was calculated in terms of the physical extent and time scale, and is described in **Table 16**.

Table 16: Pylon Position Significance Rating

SIGNIFICANCE	DESCRIPTION	SPECIALIST RATING	AVERAGE SIGNIFICANCE	SCORING
No Impact	There is no impact.	0	0 – 0.4	0-29
Low	The impacts are less important, but some mitigation is required to reduce the negative impacts.	1	0.5 – 1.4	30-49
Medium	The impacts are important and require attention; mitigation is required to reduce the negative impacts.	2	1.5 – 2.4	50-69
High	The impacts are of high importance and mitigation is essential to reduce the negative impacts.	3	2.5>	70-100

The calculation of the average significance rating for each pylon position was used as a basis to determine the significance rating of each pylon position along the route alignment. Additionally, guidelines are provided in terms of the "constructability" of the Transmission power line.

- "Access": relates to areas where accessing the proposed pylon position may be problematic.
- "Stringing": relates to the ease with which the "stringing" operation may be undertaken.

Mitchell's Plain - Stikland C

Pylon	Split	Land Owner	Contact Details	Aspect Impact									Total	Average	Site Specific Mitigation														Special Measures	Constructability	
				Mitchell's Plain - Stikland C											Aesthetics	Dust	Erosion	Fauna / Flora	Fire	Heritage	Noise	Rehabilitation	Social	Topsoil / Subsoil	Traffic	Training	Waste	Water		Access	Stringing
				Social	Wetland	Ecology	Avifauna	Geotech	Soil & Agri	Agri-Economic	Heritage	Visual																				
1	Ca			1	2	1	0	1	0	0	0	1	6	1.11			x	x	x			x					x	x		0	0
2B	Ca			1	0	0	0	1	0	0	0	2	4	0.56	x	x					x				x					1	1
3B	Ca			1	0	0	0	1	0	0	0	2	4	0.56	x															0	0
4B	Ca			2	0	0	0	1	0	0	0	2	5	0.78	x	x					x		x							0	0
5	Ca			2	0	0	0	1	0	0	0	2	5	0.78	x	x					x		x							0	0
6B	Ca			2	0	0	0	1	0	0	0	2	5	0.78	x								x							0	0
7B	Ca			0	1	0	0	1	0	0	0	2	4	0.56	x		x	x				x						x	x		0	0
8B	Ca			0	1	1	0	1	0	0	0	2	5	0.78	x		x	x				x						x	x		0	0
9B	Ca			1	0	0	0	1	0	0	0	2	4	0.56	x	x					x									0	0
10	Ca			1	0	0	0	1	0	0	0	2	4	0.56	x	x					x									0	0
11	Ca			1	0	0	0	1	0	0	0	2	4	0.56	x	x					x									0	0
12B	Ca			2	0	0	0	1	0	0	0	2	5	0.78	x	x							x							0	0
13B	Ca			2	0	0	0	1	0	0	0	2	5	0.78	x	x							x							0	0
14	Ca			1	0	1	0	1	0	0	0	2	5	0.78	x				x											0	0
15	Ca			1	0	1	0	1	0	0	0	2	5	0.78	x				x											0	0
16Ba	Ca			3	0	0	0	1	0	0	0	2	6	1.00	x						x		x			X				0	1

Pylon	Split	Land Owner	Contact Details	Aspect Impact									Total	Average	Site Specific Mitigation														Special Measures	Constructability	
				Mitchell's Plain - Stikland C											Aesthetics	Dust	Erosion	Fauna / Flora	Fire	Heritage	Noise	Rehabilitation	Social	Topsoil / Subsoil	Traffic	Training	Waste	Water		Access	Stringing
				Social	Wetland	Ecology	Avifauna	Geotech	Soil & Agri	Agri-Economic	Heritage	Visual																				
16Bb	Ca			3	0	0	0	1	0	0	0	2	6	1.00	x						x		x			X				0	1
17a	Ca			3	0	0	0	1	0	0	0	2	6	1.00	x						x		x			X				0	1
17b	Ca			2	0	0	0	1	0	0	0	2	5	0.78	x						x		x							0	0
18B	Ca			2	1	0	0	1	0	0	0	1	5	0.89					x				x							0	0
19B	Ca			2	0	0	0	1	0	0	0	1	4	0.67		x					x		x		x					1	1
20	Ca			3	0	0	0	1	0	0	0	1	5	0.89		x					x		x		x	X				1	1
21	Ca			3	0	0	0	1	0	0	0	1	5	0.89		x					x		x		x	X				1	1
22	Ca			2	0	0	0	1	0	0	0	1	4	0.67		x					x		x		x					1	1
23	Ca			2	0	0	0	1	0	0	0	1	4	0.67		x					x		x		x					1	1
24	Ca			3	0	0	0	1	0	0	0	1	5	0.89		x					x		x		x	X				1	1
25B	Ca			3	0	0	0	1	0	0	0	1	5	0.89		x					x		x		x	X				1	1
26	Ca			3	0	0	0	1	0	0	0	1	5	0.89		x					x		x		x	X				1	1
27	Ca			1	0	0	0	1	0	0	0	1	3	0.44		x					x		x		x					1	1
28	Ca			1	0	0	0	1	0	0	0	1	3	0.44		x					x		x		x					1	1
29a	Ca			1	0	0	0	1	0	0	0	1	3	0.44		x					x		x		x					1	1
29Bb	Ca			1	0	0	0	1	0	0	0	1	3	0.44		x					x		x		x					1	1
30Ba	Ca			1	0	2	0	1	0	0	0	1	5	0.89				x	x			x					x	x		1	1
30Bb	Ca			1	0	2	0	1	0	0	0	1	5	0.89				x	x			x					x	x		1	1
31	Ca			1	1	2	1	1	0	0	0	1	7	1.33		x		x	x		x	x	x				x	x		0	0
32	Ca			1	0	0	1	1	0	0	0	1	4	0.67		x		x	x		x	x	x				x	x	Bird Diverters	0	0
33	Ca			1	1	1	1	1	0	0	1	1	7	1.22				x	x										Bird Diverters	0	0
34	Ca			1	0	0	1	1	0	0	1	1	5	0.78				x	x										Bird Diverters	0	0
35B	Ca			2	2	1	0	1	0	0	1	1	8	1.44				x	x			x	x				x	x	Bird Diverters	2	2

Mitchell's Plain - Stikland D

Pylon	Split	Land Owner	Contact Details	Aspect Impact									Total	Average	Site Specific Mitigation														Special Measures	Constructability	
				Mitchell's Plain - Stikland Db																												
				Social	Wetland	Ecology	Avifauna	Geotech	Soil & Agri	Agri-Economic	Heritage	Visual			Aesthetics	Dust	Erosion	Fauna / Flora	Fire	Heritage	Noise	Rehabilitation	Social	Topsoil / Subsoil	Traffic	Training	Waste	Water		Access	Stringing
12Ba	Db			2	2	1	0	1	1	0	1	2	10	1.67	x		x	x	x			x	x	x			x	x	Bird Diverters	1	1
12Bb	Db			2	2	1	0	1	1	0	1	2	10	1.67	x		x	x	x		x	x	x	x			x	x	Bird Diverters	1	1
13a	Db			2	2	1	0	1	1	0	1	2	10	1.67	x		x	x	x			x	x	x			x	x	Bird Diverters	1	1
13b	Db			2	0	0	0	1	1	0	1	2	7	1.00	x	x			x		x		x	x					Bird Diverters	0	0
14ba	Db			1	2	1	0	1	1	0	1	3	10	1.56	x		x	x	x			x		x	x	x	x	x	Bird Diverters	0	0
14Bb	Db			1	1	1	0	1	1	0	1	3	9	1.33	x		x	x	x			x		x	x	x	x	x	Bird Diverters	0	0
15a	Db			1	1	1	0	1	1	0	1	3	9	1.33	x		x	x	x			x		x		x	x	x	Bird Diverters	1	1
15b	Db			1	1	1	0	1	1	0	1	3	9	1.33	x		x	x	x			x		x		x	x	x	Bird Diverters	1	1
16Ba	Db			1	0	0	0	1	1	0	1	3	7	0.89	x	x		x	x		x	x	x	x	x	x			Bird Diverters	0	0
16Bb	Db			1	0	0	0	1	1	0	1	3	7	0.89	x			x	x		x	x	x	x	x	x			Bird Diverters	0	0
17B	Db			1	0	0	0	1	1	0	1	3	7	0.89	x		x	x	x			x		x	x	x	x	x	Bird Diverters	1	1
18Ba	Db			1	1	0	0	1	1	0	1	3	8	1.11	x			x	x			x		x		x	x	x	Bird Diverters	0	0
18Bb	Db			1	0	0	0	1	1	0	1	3	7	0.89	x			x	x			x		x		x				0	0
19Ba	Db			1	0	0	0	1	0	0	1	1	4	0.56				x	x		x	x								0	0
19Bb	Db			1	0	0	0	1	0	0	1	1	4	0.56				x	x		x	x								0	0
20	Db			1	0	0	0	1	0	0	0	1	3	0.44		x			x		x		x							0	0
21a	Db			1	0	1	0	1	0	0	0	1	4	0.67		x			x		x		x							0	0
21b	Db			1	0	1	0	1	0	0	0	1	4	0.67		x			x		x		x							0	0
22	Db			1	0	1	0	1	0	0	0	2	5	0.78	x			x	x						x					1	1
23a	Db			1	1	0	0	1	0	0	0	3	6	0.89	x		x	x	x			x				x				0	0
23b	Db			1	0	1	0	1	0	0	0	3	6	0.89	x		x	x	x			x				x	x	x		0	0
23Bc	Db			1	0	1	0	1	0	0	0	3	6	0.89	x		x	x	x			x				x				0	0
24a	Db			1	3	0	0	1	0	0	0	2	7	1.22	x		x	x	x			x				x	x	x		0	0
24Bb	Db			3	2	0	0	1	0	0	0	2	8	1.44	x		x	x	x			x	x			x	x	x		0	0
24Bc	Db			1	3	0	0	1	0	0	0	2	7	1.22	x		x	x	x			x				x	x	x		0	0
24d	Db			1	1	0	0	1	0	0	0	2	5	0.78	x		x	x	x			x					x	x		1	1
24Be	Db			1	0	0	0	1	0	0	0	2	4	0.56	x		x	x	x			x					x	x		0	0
25Ba	Db			3	0	0	0	1	0	0	0	2	6	1.00	x				x				x				x				0	0
25Bb	Db			3	0	0	0	1	0	0	0	2	6	1.00	x	x					x		x		x		x	x			1	1
25Bc	Db			2	1	0	0	1	0	0	0	2	6	1.00	x		x	x	x			x	x				x	x		0	0
26Ba	Db			3	0	0	0	1	0	0	0	2	6	1.00	x								x			x				0	0
26Bb	Db			3	2	0	0	1	0	0	0	2	8	1.44	x		x	x	x			x	x			x	x	x		0	0

Pylon	Split	Land Owner	Contact Details	Aspect Impact									Total	Average	Site Specific Mitigation														Special Measures	Constructability	
				Mitchell's Plain - Stikland Db																												
				Social	Wetland	Ecology	Avifauna	Geotech	Soil & Agri	Agri-Economic	Heritage	Visual			Aesthetics	Dust	Erosion	Fauna / Flora	Fire	Heritage	Noise	Rehabilitation	Social	Topsoil / Subsoil	Traffic	Training	Waste	Water		Access	Stringing
27a	Db			3	2	0	0	1	0	0	0	2	8	1.44	x		x	x	x			x	x			x	x	x		0	0
27b	Db			3	2	0	0	1	0	0	0	2	8	1.44	x		x	x	x			x	x			x	x	x		0	0
27c	Db			2	2	0	0	1	0	0	0	2	7	1.22	x		x	x	x			x	x			x	x	x		0	0
28a	Db			2	0	0	0	1	0	0	0	1	4	0.67		x			x				x						0	0
28Bb	Db			2	0	0	0	1	0	0	0	1	4	0.67		x			x				x						0	0
29	Db			2	0	0	0	1	0	0	0	1	4	0.67		x							x						0	0
30B	Db			2	0	0	0	1	0	0	0	1	4	0.67		x			x				x						0	0
31B	Db			2	0	0	0	1	0	0	0	1	4	0.67		x			x				x						0	0
32B	Db			2	0	0	0	1	0	0	0	1	4	0.67		x			x				x						0	0
Gantry 1	Db			2	0	0	0	1	1	0	0	1	5	0.78					x				x						0	0
Gantry 2	Db			2	0	0	0	1	1	0	0	1	5	0.78					x				x						0	0
Gantry 3	Db			2	0	0	0	1	1	0	0	1	5	0.78					x				x						0	0
Gantry 1a	Db			2	0	0	0	1	1	0	0	1	5	0.78		x			x		x		x						0	0
Gantry 2a	Db			2	0	0	0	1	1	0	0	1	5	0.78					x				x						0	0
Gantry 3a	Db			2	0	1	0	1	1	0	0	1	6	1.00					x				x						0	0

Firgrove - Mitchell's Plain Sub Station Alternative Locations

Alternative	Land Owner	Contact Details	Aspect Impact									Total	Average	Site Specific Mitigation														Special Measures	Constructability	
			Firgrove - Mitchell's Plain Sub Station Alternative Locations																											
			Social	Wetland	Ecology	Avifauna	Geotech	Soil & Agri	Agri-Economic	Heritage	Visual			Aesthetics	Dust	Erosion	Fauna / Flora	Fire	Heritage	Noise	Rehabilitation	Social	Topsoil / Subsoil	Traffic	Training	Waste	Water		Access	Stringing
1			1	2	1	0	1	0	0	0	1	6	1.11		x	x	x	x			x	x		x		x	x		1	1

12.3.6 Environmental Specifications - Rehabilitation Activities

Rehabilitation Activities			
Activity /Issue		**Action required**	**Responsible Party**
1.	**Rehabilitation**	The Contractor shall utilise the EMP, the CoCT's Rehabilitation Plan together with Eskom's Rehabilitation Guideline documents as the basis against which all rehabilitation works shall comply. Disturbed areas that are no longer in use will be rehabilitated. If areas had topsoil removed and stockpiled prior to use, the surface will be ripped and the topsoil will be replaced. All soils and topsoil material must be bought from a reliable source, and must be free of alien seeds or grass runners. Fences, barriers and demarcations associated with the various construction phases and activities must be removed (unless the Eskom Project Manager has stipulated otherwise). The site will be cleared of all litter. The Contractor must repair any damage that the construction works have caused to neighbouring properties. All remaining construction materials must be removed from the site. Once the pipe has been removed and construction activities completed, the area must be rehabilitated and all vegetation (i.e. trees and grass) must be restored. A meeting must be held on site between the Applicant or representative, the ECO and the Contractor to approve all rehabilitation activities and to ensure that the site has been restored to a condition that is acceptable and approved by the Applicant. Rehabilitation will be conducted in a progressive manner (i.e. once construction in an area has been completed the area will be rehabilitated). The rehabilitation of the area with indigenous vegetation must coincide with the rainfall events and all alien invasive vegetation shall be removed. **Seed acquisition** The Contractor shall purchase seed from a South African National Seed Organisation (SANSOR) accredited dealer. Seed used for rehabilitation shall not be older than one season. Purchased seed must be of the correct species and of known origin, dried and packed, conforming to all legal requirements for seed. Proof of compliance must be provided to the Eskom Project Manager prior to commencement of works. The most suitable seed mix for disturbed areas to be used in rehabilitation must include indigenous species. **Seed Mix** A mix of the following pioneer, sub-climax and climax grasses is recommended: 1kg/Ha *Chloris gayana* – Rhodes grass 3kg/Ha *Cenchrus ciliaris* – Foxtail buffalo grass, Bloubuffel grass 3kg/Ha *Digitaria eriantha* – Common finger grass, Smutsvinger 1kg/Ha *Panicum maximum* – Guinea grass. **Methodology and Recommendations** The blend should be seeded using the hydro-seeding method, gel seeded with a fluid-driller or gel seeded by hand. Alternatively the seed can be mixed in with locally occurring river sand at a ratio of 1:4 (seed: sand). A tackifier (viz. Hydropam) shall be added to the seed/sand mix at the recommended dosage rate per volume used. As the recommended seed species vary greatly in size, weight and shape, they cannot effectively be dry-seeded. This leads to segregation and unsatisfactory establishment and the formation of unnatural appearing differentiation and 'colonies'. The gel mixture allows a more consistent blend of the species and consequent diverse and random establishment of the veld. Seed after the first rain onwards (April - September). If the average rainfall pattern for the area is experienced, no additional irrigation will be required. In the event of a dry period where no precipitation is received for longer than 21 days during the first six weeks after seeding, irrigation of 20mm per week will assist in successful establishment. However, it is recommended that resources be applied to using the hydro gels or water-absorbing super polymers. It is recommended that a tackifier (*viz.* Hydropam) be included in the seeding mix or applied immediately after gel seeding to reduce desiccation, wind dispersion and fauna foraging losses. Till the soil surface before seeding. This is best achieved by shallow parallel ripping or scarification along the contour or linear to the ditches. The rills or small windrows formed should be no more than 150mm apart. It is good practice to apply a mulch of harvested straw from natural grassland or veld in the vicinity. This is most effective in the period from December - February when many of the local species will be holding viable seed, which will add to the seeded blend resulting in a more diverse and locally natural veld. If there is no rainfall and subsequent germination for a period of five weeks (35 days) after sowing, the seeded area should be retreated with a tackifier and watered. Irrigation and fertilisation with nitrogen and potassium is not essential, but will accelerate establishment and growth. The critical phase is the period 14-30 days after seeding, when the grass seed has germinated and is producing its first leaves. This can be applied at 15kg of Actual N per hectare and 5kg of Actual K per hectare. It can be applied in a liquid form or conventional granular form. The recommended blend is designed to have a germination period or 'window' from 7-90 days. Lack of evidence of germination after six weeks does not indicate complete failure but a change in the population densities of the various species. It is recommended to seed an area once per season and reassess in the following season to determine whether reseeding is necessary. **Seed Availability** The recommended seed species and varieties are all freely commercially available and can be sourced by most agricultural suppliers and co-ops. They are used as forage crops by stock farmers. A local agricultural supplier should be able to source them all. They can also purchase directly from the following seed importer and supplier, who can also advise on local agents and representatives: Agricol: (021) 981 1226 The rehabilitation of the area with indigenous vegetation must coincide with the rainfall events and all alien invasive vegetation shall be removed. Rehabilitation measures for the site are to include the following: **Re-contouring** Subsoil stockpiles should be used to re-contour construction affected areas. The Contractor shall restore the profile, soil condition and landform to as close as possible state to the pre-construction state. **Scarification and ripping** All areas where rehabilitation interventions are required shall be cross-ripped before topsoil placement. Topsoil and fertile soil shall be uniformly scarified to allow for vegetation growth **Fertilising** The Contractor shall be required to perform soil analysis tests on the top 75mm of prepared surface prior to re-vegetation / seeding to determine the required fertiliser levels for permanent cover.	Contractor, ECO, EO

Rehabilitation Activities			
Activity /Issue		**Action required**	**Responsible Party**
		Schedule of works The Contractor shall schedule works for placing of topsoil once the pipeline has been successfully commissioned. Seeding can take place after the first rains of the season and should be concluded one month before the end of the growing season. **Re-vegetation** The Contractor shall appoint a reputable rehabilitation company to undertake this work. All details of the company shall be forwarded to the Eskom Project Manager prior to the commencement of the works. The seed mix required for re-vegetation will comprise a selection of species that are indigenous and locally occurring and capable of growing under natural conditions. **Control of weeds and invader plants during rehabilitation** The Contractor shall maintain rehabilitated areas free of weeds and invader plants until the end of the Defects Notification Period applicable to rehabilitation. Control of weeds and invader plants must be done in accordance with the specifications stipulated in the Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA). **Rehabilitation of the wetland areas.** The wetlands shall be rehabilitated immediately after the works have been completed as these are sensitive habitats and disturbance must be kept to a minimum. The bed of the wetland shall be restored to a similar state, in terms of the soil profile, as well as physical and chemical properties as established in the pre-construction survey. **River crossings** All temporary infrastructure shall be removed and the areas of disturbance reinstated. The contours and edges of the rivers will be reshaped in accordance to the photographic and topographical survey to tie in with the surrounding landscape. The bed of the watercourse will be restored to contain the same bedding material as prior to the commencement of pipe removal activities.	
2.	**Monitoring**	After construction, the site needs to be inspected by the ECO to ensure that the rehabilitation activities have been successful and to monitor alien vegetation re-growth. The ECO will report the condition of rehabilitation to the Applicant. The Applicant is responsible for clearing alien vegetation within the rehabilitated areas.	ECO, Applicant

12.3.7 Environmental Specifications – Operational Activities

The operational activities reflected in the table below highlight specific requirements which need to be implemented by the Applicant during the operational phase of the development. In addition, the Eskom Guideline Documents (and their respective Eskom reference number) are included which provide Eskom specific procedures associated with each of the activities / issues.

General Issues					
Activity /Issue		**Action required**	**Guideline Document**	**Reference No#**	**Responsible Party**
1.	**Aesthetics Management**	The Applicant shall reduce operational and maintenance impacts upon the aesthetics of the surrounding environment.	Transmission Environmental Policy Programme	TPL41-435	Applicant
2.	**Dust Management**	The Applicant shall preserve air quality levels to an extent that public health; safety and environmental protection are assured.	Environmental Management Transmission Environmental Policy Programme	EPC 32 – 96 TPL41-435	Applicant
3.	**Earthworks Management**	The Applicant shall minimise impacts on the receiving environment and disturbances to flora, fauna and affected landowners.	Transmission Environmental Policy Program Transmission Line Towers and Line Construction me	TPL41-435 TRMSCAAC	Applicant
4.	**Erosion Management**	The Applicant shall implement measures to prevent erosion and reduce potential impacts upon the surrounding environment.	Soil Erosion Guideline Transmission Environmental Policy Programme	TGL 41 337 TPL41-435	Applicant
5.	**Fauna and Flora Management**	The Applicant shall preserve fauna and flora through control of operational and maintenance activities. Prevent infestation of alien species during operational and maintenance activities. The CARA states that no person shall disperse any weed in the country (including an urban area) and a fine not exceeding R5 000 and/or two years imprisonment can be imposed. The Applicant shall continue to monitor and implement, if required, the Rehabilitation Plan and Alien Invasive Species Control Plan on the site.	Vegetation Management Guideline Transmission Bird Collision Prevention Guideline Transmission Bird Perch Guideline Bush Clearance Policy Transmission Environmental Policy Programme	TGL 41 334 TGL41-335 TGL41-332 ESKASA BG3 TPL41-435	Applicant
6.	**Fire and Emergency Management**	The Applicant shall restrict the occurrence of fires and ensure all role players can respond efficiently and effectively, thereby reducing potential impact. Orange safety fencing must be used around any area that requires the digging of a trench for maintenance purposes. The standard specifications for municipal civil engineering works must be followed for emergency maintenance purposes.	Fire Protection Association Guideline Fire Risk Management Transmission Environmental Policy Programme	TGL 41 336 TLL 32 124 TPL41-435	Applicant
7.	**Hazardous Substance Management**	The Applicant shall minimise the impact of hazardous substance storage, handling and disposal on the receiving environment Accidental pollution incidents shall be reported to the Applicant immediately when they occur. The Applicant shall notify the relevant authorities as well as arrange appropriate amelioration. All potential hazardous waste generated at the site including diesel, petroleum, oil and lubricants; pesticides; and effluent disinfectants shall be removed and disposed by an approved subcontractor to an approved disposal site. Potentially hazardous raw and waste materials shall be handled and stored on-site in accordance with the manufacturer's specification and in accordance with the Act. Should pesticides be used for controlling weeds or vegetation at any place adjacent to the pipeline, the Fertilisers, Farms Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947) apply. Should subcontractors apply pesticides, the Applicant shall ensure that their operators are registered according to the Act. Should the CoCT staff be used for this application, the Applicant shall ensure that they are properly trained.	Herbicide Management Policy Safe Use of Herbicides and Pesticides Transmission Environmental Policy Programme	ESKPBAA D4 ESKASAA L0 TPL41-435	Applicant
8.	**Heritage Management**	The Applicant shall limit and mitigate potential heritage impacts and chance findings should they occur.	Transmission Environmental Policy Programme	TPL41-435	Applicant
9.	**Infrastructure Management**	The Applicant shall reduce impacts of the infrastructure on air quality, aesthetics, land access and the surrounding environment.	Transmission Environmental Policy Programme	TPL41-435	Applicant

General Issues					
Activity /Issue		**Action required**	**Guideline Document**	**Reference No#**	**Responsible Party**
10.	**Land Use**	The Applicant shall minimise disturbances to landowners; land use rights and associated impacts upon commercial activities. The Applicant shall respond to queries and complaints from the public and documenting the details of such communications. No soil erosion or invasion of declared weeds and/or invader plant(s) takes place, especially on rehabilitated areas. The Applicant shall continue to monitor and implement, if required, the Rehabilitation Plan and Alien Invasive Species Control Plan on the site, especially the rehabilitated areas. The requirements of CARA apply.	Access to Farms Guideline Transmission Servitude Gates Standard Transmission Environmental Policy Programme	TPC 41 340 TGL41-338 TPL41-435	Applicant
11.	**Noise Management**	Reduce operational and maintenance related noise affecting the surrounding environment. Noise emanating from operational activities shall not be disturbing noise. The sound level from the site measured at the nearest dwelling must not exceed the ambient noise level by more than 7dBA.	Environmental Management Transmission Environmental Policy	EPC 32 – 96 TPL41-435	Applicant
12.	**Rehabilitation Plan**	To rehabilitate impacted areas to a suitable land capability class similar to that of the surrounding environment. Rehabilitation will take existing land uses into consideration. Rehabilitation should start immediately after work is completed.	Transmission Environmental Policy Program Vegetation Management Guideline	TPL41-435 TGL41-334	Applicant
13.	***Social***	Maximise the use of local labour and contractors where possible by developing a strategy to involve local labour in the construction process The recruitment process and the use of contractors should be clearly communicated to the local communities The communication strategy should ensure that unrealistic employment expectations are not created. A representative of Eskom could liaise with the local councillors to either attend key community meetings arranged within the various wards to discuss the employment and recruitment process; or liaise with the local councillors to ensure that the correct information regarding this issue is portrayed to the communities via the councillors. Eskom personnel should preferably not access private properties without prior notification of the property owners. Eskom maintenance personnel should be in possession of the required identification documents when undertaking maintenance work. Eskom personnel should behave properly at all times. Local labourers should be employed, where possible. Before construction commences, representatives from the CoCT and community leaders (e.g. councillors) and community-based organisations, should be informed of the details of the contractors, size of the workforce and construction schedules. Should a large number of temporary workers not form part of the local community members, the contractor should make certain that the “outside” workforce carry identification tags or uniforms to be easily identifiable. It should furthermore be ensured that the inflow of workers and their presence in the high density settlements do not create conflict within these surrounding communities. Local community organisations and policing forums / neighbourhood watches must be informed of the presence of an outside workforce (where relevant).			Eskom Project Manager, Contractor, EO, SO, ECO
14.	**Soil Management**	The Applicant shall manage the removal and stockpiling of topsoil and subsoil during the maintenance and operation phase of the scheme for use during rehabilitation.	Transmission Environmental Policy Programme	TPL41-435	Applicant
15.	**Traffic Management**	The Applicant shall minimise the impacts and extent of related traffic on the surrounding road network and environment, whilst maximising road user safety. Vehicles used for the maintenance of the pipeline must use existing access roads only. New access roads may not be used for this purpose. Access to the pipeline servitude from the existing access road must be the most direct route possible to the servitude. The maintenance of the pipeline servitude that goes through the wetland must be undertaken with caution. Access through the wetland must be limited by maintenance vehicles.	Transmission Environmental Policy Programme	TPL41-435	Applicant
16.	**Training Programmes**	The Applicant shall foster skills transfer, environmental awareness, health and safety awareness and materials and equipment skills.	Safety, Health, and Environment (SHE) Policy Transmission Environmental Policy Programme	EPC 32 – 94 TPL41-435	Applicant
17.	**Waste Management**	The Applicant shall implement measures to reduce, monitor and manage waste generation, whilst maximising recycling efficiency.	Waste Management Policy Transmission Environmental Policy Programme	ESKPBAAC4 TPL41-435	Applicant
18.	**Water Management**	The Applicant shall minimise the impact and maintain integrity of affected water resources. Precaution shall be taken that no surface or groundwater becomes polluted either through seepage or natural flow. Any deliberate or unplanned pollution of water is an offence according to the NWA and punishable with an undetermined fine, and/or five years imprisonment.	Environmental Management Transmission Environmental Policy	EPC 32 – 96 TPL41-435	Applicant

General Issues					
Activity /Issue		**Action required**	**Guideline Document**	**Reference No#**	**Responsible Party**
		Operational and maintenance staff shall not be permitted to use the watercourses for the purpose of bathing, washing of clothes, vehicles, operational and maintenance equipment nor disposal of any other waste.			
		Should an incident occur, which can cause water pollution, especially if it affects watercourses, the office of the Department of Water Affairs (Western Cape Region) shall be contacted immediately (see requirements in the NWA). Cleaning up shall take place in consultation with the Department.			
		No person shall discard or dump any litter within or adjacent to the servitude. At all times operation and maintenance staff should ensure that litter is discarded in appropriate containers.			
		Any solid waste derived during operation and maintenance shall be disposed at the registered Coastal Park Landfill Site.			

12.3.8 Environmental Specifications – Decommissioning

The decommissioning activities reflected in the table below highlight specific requirements which need to be implemented by the Applicant during the decommissioning phase of the development. In addition, the Eskom Guideline Documents (and their respective Eskom reference number) are included which provide Eskom specific procedures associated with each of the activities / issues.

General Issues					
Activity /Issue		**Objective**	**Guideline Document**	**Reference No#**	**Responsible Party**
1.	**Aesthetics Management**	The Applicant shall reduce decommissioning impacts upon the aesthetics of the surrounding environment.	Transmission Environmental Policy Programme	TPL41-435	Applicant
2.	**Dust Management**	The Applicant shall preserve air quality levels to an extent that public health; safety and environmental protection are assured.	Environmental Management Transmission Environmental Policy Programme	EPC 32 – 96 TPL41-435	Applicant
3.	**Earthworks Management**	The Applicant shall minimise impacts on the receiving environment and disturbances to flora, fauna and affected landowners.	Transmission Environmental Policy Program Transmission Line Towers and Line Construction me	TPL41-435 TRMSCAAC	Applicant
4.	**Erosion Management**	The Applicant shall prevent erosion and reduce potential impacts upon the surrounding environment.	Soil Erosion Guideline Transmission Environmental Policy Programme	TGL 41 337 TPL41-435	Applicant
5.	**Fauna and Flora Management**	The Applicant shall preserve fauna and flora through control of decommissioning activities. Prevent infestation of alien species during decommissioning activities.	Vegetation Management Guideline Transmission Bird Collision Prevention Guideline Transmission Bird Perch Guideline Bush Clearance Policy Transmission Environmental Policy Programme	TGL 41 334 TGL41-335 TGL41-332 ESKASA BG3 TPL41-435	Applicant
6.	**Fire Management**	The Applicant shall restrict the occurrence of fires and ensure all role players can respond efficiently and effectively, thereby reducing potential impact.	Fire Protection Association Guideline Fire Risk Management Transmission Environmental Policy Programme	TGL 41 336 TLL 32 124 TPL41-435	Applicant
7.	**Hazardous Substance Management**	The Applicant shall minimise the impact of hazardous substance storage, handling and disposal on the receiving environment	Herbicide Management Policy Safe Use of Herbicides and Pesticides Transmission Environmental Policy Programme	ESKPBAA D4 ESKASAA L0 TPL41-435	Applicant
8.	**Heritage Management**	The Applicant shall limit and mitigate potential heritage impacts and chance findings should they occur.	Transmission Environmental Policy Programme	TPL41-435	Applicant
9.	**Infrastructure Management**	The Applicant shall to reduce impacts of decommissioning the infrastructure on air quality, aesthetics, land access and the surrounding environment.	Transmission Environmental Policy Programme	TPL41-435	Applicant
10.	**Land Use**	The Applicant shall minimise disturbances to landowners; land use rights and associated impacts upon commercial activities. During decommissioning of any part of the Transmission power line, the following steps shall be undertaken to ensure that the decommissioning and resulting rehabilitation is undertaken as effectively and responsibly as possible. Upon the decision for decommissioning, the Applicant shall inform the DEA, or, should this department be no longer in operation, the relevant authority in charge of such affairs, in writing, stating the proposed closure date and the reasons for such action, within 30 days of the decision being made. At all times during the decommissioning phase the Applicant will ensure that all relevant regulations, national and local legislation are adhered to and that the relevant authorities are informed and involved in the process as much as possible. Any additional recommendations or requirements made by the DEA in relation to this activity shall be recorded and adhered to at all times during the decommissioning phase. All equipment and materials relating to the operation and maintenance of the Transmission power line shall be removed from the site in accordance with recommendations of DEA or other relevant authority.	Access to Farms Guideline Transmission Servitude Gates Standard Transmission Environmental Policy Programme	TPC 41 340 TGL41-338 TPL41-435	Applicant

General Issues				
Activity /Issue	**Objective**	**Guideline Document**	**Reference No#**	**Responsible Party**
11. Noise Management	The Applicant shall reduce decommissioning related noise affecting the surrounding environment.	Environmental Management Transmission Environmental Policy	EPC 32 – 96 TPL41-435	Applicant
12. Rehabilitation Plan	To rehabilitate impacted areas to a suitable land capability class similar to that of the surrounding environment. Rehabilitation will take existing land uses into consideration. Rehabilitation should start immediately after decommissioning is completed. All excavations must be rehabilitated with soil and topsoil, which should not contain invasive plant species (in compliance with the CARA, as amended), to the satisfaction of the ECO. All building materials must be removed from the site. All compacted surfaces must be ripped and re-vegetated as per the re-vegetation specifications. • A meeting must be held on-site between the Applicant or representative, the ECO and the appointed Contractor to approve all rehabilitation activities and to ensure that the site has been restored to a condition that is acceptable and approved by the Applicant and the DEA. • The most suitable seed mix for disturbed areas to be used in rehabilitation would include indigenous species. • Rehabilitation will be conducted in a progressive manner (i.e. once construction in an area has been completed the area will be rehabilitated). The rehabilitation of the area with indigenous vegetation must coincide with the rainfall events and all alien invasive vegetation shall be removed. Rehabilitation measures for the site are to include the following: • Re-contouring ○ Subsoil stockpiles should be used to re-contour construction affected areas. The Contractor shall restore the profile, soil condition and landform to as close as possible state to the pre-construction state. • Scarification and ripping ○ All areas where rehabilitation interventions are required shall be cross-ripped before topsoil placement. Topsoil and fertile soil shall be uniformly scarified to allow for vegetation growth • Fertilising ○ The Contractor shall be required to perform soil analysis tests on the top 75mm of prepared surface prior to re-vegetation/seeding to determine the required fertiliser levels for permanent cover. • Seed acquisition ○ The Contractor shall purchase seed from a South African National Seed Organisation (SANSOR) accredited dealer. Seed used for rehabilitation shall not be older than one season. Purchased seed must be of the correct species and of known origin, dried and packed, conforming to all legal requirements for seed. Proof of compliance must be provided to the Eskom Project Manager prior to commencement of works. • Schedule of works ○ The Contractor shall schedule works for placing of topsoil once the Transmission power line has been successfully decommissioned. Seeding can then take place after the first rains of the season and should be concluded by one month before the end of the growing season. • Re-vegetation ○ The Contractor shall appoint a reputable rehabilitation company to undertake this work. All details of the company shall be forwarded to the Eskom Project Manager prior to the commencement of the works. The seed mix required for re-vegetation will comprise a selection of species that are indigenous and locally occurring and capable of growing under natural conditions. ○ The grass cover requirements at the end of the growing seasons following the rehabilitation work and hydro seeding are: ○ 60% cover of the approved seed mix species diversity after the first growing season. ○ 80% cover of the approved seed mix species diversity after the second growing season. ○ The Defects Notification Period applicable to rehabilitation will commence when the 60% grass cover is achieved and end when 80% grass cover is achieved.	Transmission Environmental Policy Program Vegetation Management Guideline	TPL41-435 TGL41-334	Applicant

General Issues					
Activity /Issue		**Objective**	**Guideline Document**	**Reference No#**	**Responsible Party**
		○ The seed mix for use in rehabilitation must be an approved mix of indigenous grass species common to the area. The Contractor must inform the Eskom Project Manager to deviations from this seed mix prior to purchase of seed. • Control of weeds and invader plants during rehabilitation ○ The Contractor shall maintain rehabilitated areas free of weeds and invader plants until the end of the Defects Notification Period applicable to rehabilitation. Control of weeds and invader plants must be done in accordance with the specifications stipulated in the CARA. • Erosion control ○ The Contractor shall be responsible for the prevention of erosion in areas impacted upon by their activities. All erosion repairs must be implemented at the first signs thereof and no erosion shall be allowed to develop on a large scale. The Contractor must present the site in an erosion free state before the issuing of the Performance Certificate. • Water course crossings ○ All temporary infrastructure shall be removed and the areas of disturbance reinstated. The banks and contours of the water course will be reshaped in accordance to the photographic and topographical survey to tie in with the surrounding landscape. The bed of the watercourse will be restored to contain the same bedding material as prior to construction activities taking place. • Wetlands ○ At the time of decommissioning, the appointed Contractor or the Applicant must submit a method statement to the DEA to manage and rehabilitate the work in the wetlands in accordance with the specification. The wetlands shall be rehabilitated immediately after the works have been completed as these are sensitive habitats and disturbance must be kept to a minimum. The beds of the wetlands shall be restored to a similar state, in terms of the soil profile, as well as physical and chemical properties as established in the pre-construction survey.			
13.	**Soil Management**	The Applicant shall manage the removal and stockpiling of topsoil and subsoil during the decommissioning phase of the scheme for use during rehabilitation.	Transmission Environmental Policy Programme	TPL41-435	Applicant
14.	**Traffic Management**	The Applicant shall minimise the impacts and extent of related traffic on the surrounding road network and environment, whilst maximising road user safety.	Transmission Environmental Policy Programme	TPL41-435	Applicant
15.	**Training Programmes**	The Applicant shall foster skills transfer, environmental awareness, health and safety awareness and materials and equipment skills.	Safety, Health, and Environment (SHE) Policy Transmission Environmental Policy Programme	EPC 32 – 94 TPL41-435	Applicant
16.	**Waste Management**	The Applicant shall implement measures to reduce, monitor and manage waste generation, whilst maximising recycling efficiency. All recyclable rubble and solid waste (e.g. scrap metal, cables, bottles, cans, and plastic residues) shall be collected and disposed of through a registered recycling company. Waste manifests will be kept by the Contractor and shown to the ECO on request. All non-recyclable rubble and solid waste shall be collected and disposed off at an approved waste disposal site (currently the registered Coastal Park Landfill Site). Waste manifests will be shown to the ECO on request.	Waste Management Policy Transmission Environmental Policy Programme	ESKPBAAC4 TPL41-435	Applicant
17.	**Water Management**	The Applicant shall minimise the impact and maintain integrity of affected water resources.	Environmental Management Transmission Environmental Policy	EPC 32 – 96 TPL41-435	Applicant

13 REFERENCES

BKS. 2011. Draft Environmental Impact Assessment (EIA) Report for a 400kV Double Circuit Transmission Power Line from Firgrove to Mitchell's Plain and Mitchell's Plain Substation. DEA Reference Number: 12/12/20/1867. Pretoria.

CITY OF CAPE TOWN, 2007. Environmental Management Plan - Specification EM – 02/07: Environmental Management, Version 6 (2007).

DEAT, 2002. Screening, Information Series 3, Department of Environmental Affairs and Tourism, Pretoria.

DEAT, 2004a. EMPs, Integrated Environmental Management, Information Series 12, Pretoria.

DEAT, 2004. Environmental Auditing, Integrated Environmental Management, Information Series 14, Pretoria.

DWAF, February 2005. Environmental Best Practice Guidelines: Construction. Integrated Environmental Management Sub-Series No. IEMS 1.6. Third Edition. Pretoria.

DWAF, February 2005. Environmental Site Management and Rehabilitation Awareness Course: General Level. Integrated Environmental Management Sub-Series No. IEMS 1.6. Third Edition. Pretoria.

DWAF, February 2005. Environmental Monitoring and Auditing Guideline. Integrated Environmental Management Sub-Series No. IEMS 1.7. Third Edition. Pretoria.

LOCHNER, P. 2005. Guideline for EMPs. CSIR Report No ENV-S-C 2005-053 H. Republic of South Africa, Provincial Government of the Western Cape, DEA & Development Planning, Cape Town.

ANNEXURE A:

Route Alignment Diagram

ANNEXURE B:

NATIONAL WATER STANDARDS

GENERAL AND SPECIAL STANDARDS

GOVERNMENT GAZETTE 18 MAY 1984 NO. 9225

REGULATION NO. 991 18 MAY 1984

REQUIREMENTS FOR THE PURIFICATION OF WASTE WATER OR EFFLUENT

By virtue of the powers vested in me by section 21(1) (a) of the Water Act, 1956 (Act 54 of 1956) I, Sarel Antoine Strydom Hayward, in my capacity as Minister of Environment Affairs and Fisheries, hereby prescribe the following requirements for the purification of waste water or effluent produced by or resulting from the use of water for industrial purposes.

1. SPECIAL STANDARD

Quality standards for waste water or effluent arising in the catchment area draining water to any river specified in Schedule I or a tributary thereof at any place between the source thereof and the point mentioned in the Schedule, in so far as such catchment area is situated within the territory of the Republic of South Africa.

1.1Colour, odour or taste

The waste water or effluent shall not contain any substance in a concentration capable of producing any colour, odour or taste.

1.2pH

Shall be between 5,5 and 7,5.

1.3Dissolved oxygen

Shall be at least 75 percent saturation.

1.4Typical (faecal) coli:

The waste water or effluent shall contain no typical (faecal) coli per 100 millimetres.

1.5Temperature

Shall be a maximum of 25°C.

1.6Chemical oxygen demand

Not to exceed 30 milligrams per litre after applying the chloride correction.

1.7Oxygen absorbed:

The oxygen absorbed from acid N/80 potassium permanganate in 4 hours at 27° C shall not exceed 5 milligrams per litre.

1.8Conductivity

1.8.1 Not to be increased by more than 15 percent above that of the intake water.

1.8.2 The conductivity of any water, waste water or effluent seeping or draining from any area referred to in section 21(6) of the aforementioned Water Act shall not exceed 250 milli-Siemens per metre (determined at 25° C).

1.9Suspended solids

Not to exceed 10 milligrams per litre.

1.10 Sodium content

Not to be increased by more than 50 milligrams per litre above that of the intake water.

1.11 Soap, oil and grease

None.

1.12 Other constituents

Constituents	Maximum concentration in milligrams per litre
Residual chlorine (as CP)	Nil
Free and saline ammonia (as N)	1,0
Nitrates (as N)	1,5
Arsenic (as As)	0,1
Boron (as B)	0,5
Total chromium (as Cr)	0,05
Copper (as Cu)	0,02
Phenolic compounds (as phenol)	0,01
Lead (as Pb)	0,1
Soluble ortho-phosphate (as P)	1,0
Iron (as Fe)	0,3
Manganese (as Mn)	0,1
Cyanides (as Cn)	0,5

Sulphides (as S)	0,05
Fluoride (as F)	1,0
Zinc (as Zn)	0,3
Cadmium (as Cd)	0,05
Mercury (as Hg)	0,02
Selenium (as Se)	0,05

The wastewater or effluent shall contain no other constituents in concentrations which are poisonous or injurious to trout or other fish forms of aquatic life.

2. SPECIAL STANDARD FOR PHOSPHATE

Wastewater or effluent arising in the catchment area within which water is drained to any river specified in Schedule II or a tributary thereof at any place between the source thereof and the point mentioned in the schedule, in so far as such catchment area is situated within the territory of the Republic of South Africa shall not contain soluble ortho-phosphate (as P) in a higher concentration than 1,0 milligram per litre.

3. GENERAL STANDARD

Quality standards for waste water or effluent arising in any area other than an area in which the SPECIAL STANDARD is applicable, as described in paragraph 1.

3.1Colour, odour or taste:

The wastewater or effluent shall not contain any substance in a concentration capable of producing any colour, odour or taste.

3.2pH

Shall be between 5,5 and 9,5.

3.3Dissolved oxygen

Shall be at least 75 percent saturation.

3.4Typical (faecal) coli

The wastewater or effluent shall not contain any typical (faecal) coli per 100 millilitres.

3.5Temperature

Shall be a maximum of 35°C.

3.6Chemical oxygen demand

Not to exceed 75 milligrams per litre after applying the chloride correction.

3.7Oxygen absorbed:

The oxygen absorbed from acid N/80 potassium permanganate in 4 hours at 27°C shall not exceed 10 milligrams per litre.

3.8Conductivity

3.8.1 Not to be increased by more than 75 milli-Siemens per metre (determined at 25°C) above that of the intake water.

3.8.2 The conductivity of any water, wastewater or effluent seeping or draining from any area referred to in section 21(6) of the aforementioned National Water Act shall not exceed 250 milli-Siemens per metre (determined at 25° C).

3.9Suspended solids

Not to exceed 90 milligrams per litre.

3.10 Sodium content

Not to be increased by more than 90 milligrams per litre above that of the intake water.

3.11 Soap, oil and grease

Not to exceed 2,5 milligrams per litre.

3.12 Other constituents

Constituents	Maximum concentration in milligrams per litre
Residual chlorine (as C1)	0,1
Free and saline ammonia (as N)	1,0
Arsenic (as As)	0,1
Boron (as B)	0,5
Hexavalent chromium (as Cr)	0,05
Total chromium (as Cr)	0,05
Copper (as Cu)	0,02
Phenolic compounds (as phenol)	0,01
Lead (as Pb)	0,1
Soluble ortho-phosphate (as P)	1,0
Iron (as Fe)	0,3
Manganese (as Mn)	0,1

Constituents	Maximum concentration in milligrams per litre
Cyanides (as Cn)	0,5
Sulphides (as S)	0,05
Fluoride (as F)	1,0
Zinc (as Zn)	0,3
Cadmium (as Cd)	0,05
Mercury (as Hg)	0,02
Selenium (as Se)	0,05

3.12.1 The sum of the concentrations of the following metal shall not exceed 1 milligram per litre: Cadmium (as Cd), chromium (as Cr), copper (as Cu), mercury (as Hg) and lead (as Pb).

3.12.2 The wastewater or effluent shall contain no constituents in concentrations which are poisonous or injurious to humans, animals, fish other than trout, or other forms of aquatic life, or which are deleterious to agricultural use.

4. METHODS OF TESTING

All tests shall be carried out in accordance with methods prescribed by and obtainable from the South African Bureau of Standards, referred to in the Standards Act, No. 30 of 1982, as listed in Schedule III.

NOTE:

(a) Further information and elucidation may be obtainable from the Director-General: Environment Affairs, Private Bag X313, Pretoria, 0001.

(b) Government Notices R.553 of 5 April 1962, R.969 of 22 June 1962 and R.1567 of 1 August 1980 are hereby withdrawn.

ANNEXURE C:

Main Actions Required by the Contractor for Compliance with the EMP

MAIN ACTIONS REQUIRED BY THE CONTRACTOR FOR COMPLIANCE WITH THE EMP

1 PRIOR TO COMMENCEMENT

1.1 Method Statements

The Contractor shall submit project and task specific method statements to the Eskom Project Manager within 14 days of receipt of the Letter of Acceptance.

Activities shall only be allowed to commence once the method statements have been approved by the Eskom Project Manager.

1.2 Environmental Awareness Training preparation

The Contractor shall be required to present the Environmental Awareness Training to all personnel within 7 days of the project commencing. The Contractor shall manage and implement all the requirements associated with the presenting the training programme with the Eskom Project Manager before the Commencement Date.

2 TWO WEEKS AFTER COMMENCEMENT

2.1 Demarcation of the Site

The Contractor shall be required to establish a site office within the project footprint or alternatively at a locality appropriately zoned and/orauthorised for such use and approved by the ECO. The Contractor shall be required to erect and maintain a temporary fence along the boundary perimeter and at all sites identified as “no-go” areas, to the satisfaction of the Eskom Project Manager.

The Contractor shall select a location that has easy access and which has already been cleared or disturbed by previous human activity (e.g. previous construction camps or stockpile areas). All construction activities, materials, equipment and personnel will be restricted to within the area specified.

2.2 ENVIRONMENTAL AWARENESS COURSE

The Contractor shall ensure all staff attend the environmental awareness training to be held in or before the first week after the commencement date.

FOLLOW-ON FROM THE ENVIRONMENTAL AWARENESS COURSE

The contractor shall be responsible for presenting follow up training on a six monthly basis.

During construction, if new personnel come onto site, the Contractor shall be responsible for providing awareness training and thus ensure these personnel are aware of the environmental specifications on site.

2.3 METHOD STATEMENT AWARENESS

Where applicable, the Contractor shall provide task-specific training on an *ad hoc* basis when workers are engaged in activities, which require method statements.

2.4 Emergency preparedness

The Contractor shall ensure all measures required to prevent, mitigate, manage and control an emergency situation are implemented. This activity shall require regular review during construction.

3 DURING CONSTRUCTION

3.1 CONTRACTOR FAMILIARISATION OF THE EMP

The Contractor shall ensure a copy of the EMP and its relevant Project Specification clauses are available on Site, and shall ensure that all the personnel associated with the project (including sub-contractors and suppliers), are familiar with and understand the specifications contained in the EMP.

3.2 METHOD STATEMENTS

All other task specific method statements required during the course of construction, shall be submitted to the Eskom Project Manager for approval 14 days prior to the proposed commencement of the activity.

3.3 SITE SECURITY

The Contractor shall, where applicable, ensure that measures are implemented to secure the site

during all nonworking hours, including public holidays.

3.4 Materials Handling, Use and Storage

The Contractor shall ensure all materials delivered, handled, used or stored are done in compliance with the requirements of the EMP. Additionally, the Contractor shall ensure all measures are in place to manage, mitigate and control an emergency situation should one arise.

The Contractor shall ensure all staff are adequately trained in all elements pertaining to such materials.

4 AFTER CONSTRUCTION-RELATED ACTIVITIES ARE COMPLETE

4.1 Site Cleanup

Within 7 days of the completion of construction related activities, the Contractor shall commence with the clearing and cleaning of the site, ensuring everything not forming part of the permanent works is removed from site.

4.2 Re-vegetation and Rehabilitation

The Contractor shall be responsible for rehabilitating and re-vegetating all areas impacted upon by construction related activities to the satisfaction of the Eskom Project Manager, as required within the rehabilitation specification. The commencement of these activities will be agreed to with the Eskom Project Manager prior to their commencement.

ANNEXURE D:

HOW TO WRITE A METHOD STATEMENT

1 METHOD STATEMENTS

The Contractor shall be required to undertake various tasks / activities in order to fulfil the conditions as stipulated in the contract. Therefore, in order for the Eskom Project Manager to be satisfied that the Contractor has a comprehensive understanding of the requirements of the task / activity, the Contractor shall submit method statements to the Eskom Project Manager for approval prior to the commencement of the task / activity.

The method statement is a dynamic document integrating all facets of the task / activity, thereby ensuring the reader a comprehensive understanding of the actions associated with implementing the task / activity.

The method statement shall be submitted to the Eskom Project Manager for approval a minimum of 14 days prior to the commencement of the task / activity. During this period, the Eskom Project Manager shall consult with other members of the project management team to ascertain the Contractors knowledge and understanding of the requirements. Should the Eskom Project Manager ascertain there to be gaps within the Contractors understanding, the method statement shall be returned to the Contractor for review and re-submission.

Upon approval of the method statement, both the Eskom Project Manager and the Contractor shall sign the method statement denoting mutual agreement that the contents thereof meets the minimum requirements to successfully complete the task / activity. By signing the method statement, the Contractor commits to working in accordance the agreed method.

Due to the method statement being a dynamic document, regular amendments may be required to ensure the implementation thereof corresponds with how the task / activity is actually being implemented; and in accordance to potentially changing requirements.

1.1 Purpose

The purpose of the method statement is to:

- *Outline the safe manner in which the task / activity is to be undertaken*
- *Provide induction material for all undertaking the task / activity to understand*
- *Meet legal requirements – hazard identification and control*
- *Provide a programme against work, material, time, staff and anticipated problems are to be managed*
- *Act as a tool in quality assurance*

1.2 Scope

A method statement describes the scope of the intended task / activity in an easy to understand step – by – step manner. This is particularly important to reduce potential confusion and ambiguity of the contents by those personnel required to implement it.

The method statement should clearly indicate:

- *What – a brief concise description of the task / activity to be undertaken;*
- *Who – a brief concise description of the personnel involved with undertaking the task / activity;*

- *When - a brief concise description of the sequence of actions with due commencement and completion dates of the task / activity to be undertaken;*
- *Where - a brief concise description and map / drawing of the locality of the task / activity to be undertaken;*
- *Why - a brief concise description of the importance and requirement of the task / activity to be undertaken; and*
- *How - a brief concise description of the methods to be implemented, materials and equipment to be used for the task / activity to be undertaken.*

1.3 Language use

The method statement must be written in plain English so that they are understood by all. Therefore a well thought through and well written method statement providing clear and concise specific work plans, can save much time and money and potentially prevent the occurrence of incidents and accidents.

The implementation therefore of the method statements shall be audited by the ECO. Consequently the method statements must contain sufficient information and detail to satisfy the Eskom Project Manager and ECO that the works will be implemented correctly and that potential incidents / accidents shall mitigated and managed.

Please remember to:

- *Consider the reader*
- *Communicate a clear message*
- *Use clear and concise language*
- *Consider how the information is portrayed*

1.4 Site Specific Requirements

The method statement must be site and project specific. Method statements copying information contained within the EMP, specifications or other documents shall not be considered as they do not indicate to the person responsible for approving the document, that the Contractor has a clear understanding of what is required.

1.5 Minimum Requirements

The method statement should as a minimum address the following:

i. Description

Provide a brief and concise description of the task at hand.

ii. Personnel Qualifications and Experience

- *List all the details of qualifications and experience required for the completion of the task.*
- *Experience may cover previous work done in the area that may not require certificates or licences.*

iii. Personnel, Duties and Responsibilities

Give details of the duties and specific responsibilities of supervisors and other personnel. For example, describe such things as daily toolbox talks and guidance provided by the Environmental Officer.

iv. Training Required to Complete Work

Make sure that all workers and their Supervisors are trained in the procedures needed to complete the job safely and in an environmentally responsible way, especially when undertaking task for the first time or where new or changed work methods are utilised.

v. Programme

Provide a clear and concise programme indicating all phases and time frames associated with the task.

vi. Construction sequence and method

Indicate all steps associated with task at hand. This must be done in a manner which is easily understandable and leaves no uncertainties to staff that are required to implement the task in the field.

vii. Possible Hazards

Include all possible hazards such as:

- *Hazardous substances, explosives, dust, etc*
- *Hazards to others in area*
- *Rubbish, electrical, fills*

viii. Resources/Plant/Equipment

List resources, plant and equipment that you will use on the job, e.g. ladders, scaffold etc.

ix. Environmental

Indicate Environmental management responsibilities

Provide Environmental guidelines

Specify Employee training and involvement

Indicate the following:

- *Material consumption*
- *Energy consumption*
- *Water consumption*
- *Buildings, machinery, soil*
- *Residual materials and waste*
- *Atmospheric emissions, noise and odour pollution*
- *Wastewater*
- *Accidents and accident prevention*
- *Transport*

x. Health and Safety

List all safety controls such as:

- *MSDS*
- *Warning Signs*
- *Personal protective equipment*
- *Storage of materials and equipment*
- *Fellow workers/public safety provisions*
- *Housekeeping*

xi. Monitoring Systems

How will the execution of the task be monitored?

xii. Emergency/disaster incident and reaction procedures

Procedures must be included indicating how incidents/accidents will be dealt with and what steps are in place to prevent such an incident/accident from occurring.

xiii. General

Explanation of important technical/environmental terms

ANNEXURE E:

MAPS OF ECOLOGICALLY SENSITIVE AREAS

ANNEXURE F:

MAPS OF THE PROJECT AREA