TRANSMISION SERVICES

ENVIRONMENTAL MANAGEMENT PLAN

BRAVO INTEGRATION PROJECT: DIVERSION OF THE DUVHA-MINERVA 400kV LINE

DEAT Reference no. 12/12/20/1204

Prepared By:

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1 INTRODUCTION

This document constitutes the Environmental Management Plan (EMP) for the deviation of the existing Duvha-Minerva 400kV Transmission Power line alongside the northern border of the approved Bravo Power Station site. (Bravo Power Station: DEAT Ref: No 12/12/20/807) The proposed 5400MW coal fired Power Station will be located near Witbank on approximately 2500ha of the Farm Hartebeesfontein 537 JR and the Klipfontein 566 JR. This deviation is intended to allow the Power station terracing work to be aligned properly. The deviation of the line will be done within the boundaries of the Power Station site.

This 400kV line to be diverted is approximately 15km in length. The Department of Environmental Affairs and Tourism (DEAT) provided Environmental Authorisation for the construction of the power line (DEAT Ref: 12/12/20/1204) on 8 August 2008.

This EMP has been compiled in order to address the potential environmental impacts that the deviation of the above mentioned line could have on the surrounding environment (within the Power Station site). This document serves as the environmental specification to Eskom staff and outside contractors with regards to addressing environmental issues identified prior to the implementation of this deviation. It is the overall responsibility of the Project Manager and Contractor to ensure compliance with all the environmental specifications in the document as well as the relevant legislation.

2 LEGAL CONTEXT

A growing awareness of the environment and an increase in the number of environmental laws and regulations, present company management with a daunting task of monitoring, interpreting and implementing systems to produce a workable plan to comply with legal requirements.

The list below was compiled to ensure that the person responsible for deviation of this line is aware of their legal responsibilities and liabilities. Complying with these laws and regulations will minimise the risks in terms of legal, financial (claims) and rehabilitation costs.

Non compliance to environmental law is a criminal offence and if prosecuted Eskom will be liable for any environmental damage incurred.

ACT NAME	ACT NO	NOTES/REMARKS
NATIONAL ENVIRONMENTAL MANAGEMENT ACT	107 of 1998	**LIST OF ACTIVITIES AND COMPETENT AUTHORITIES IDENTIFIED IN TERMS OF SECTIONS 24 AND 24D**

ACT NAME	ACT NO	NOTES/REMARKS
Conservation of Agricultural Resources Act	43 of 1983	**Control of utilisation and protection of wetlands; soil conservation; control and prevention of veld fires; control of weeds and invader plants**.
Environment Conservation Act	73 of 1989	**Controls for the effective protection and utilisation of the environment, littering, waste disposal, noise and various other activities, which may have a detrimental effect on the environment** *Φ Waste management* *Φ Application of waste disposal permit*
Fencing Act	31 of 1963	**Prohibition of damage to a property owner's gates and fences** *Φ Climbing or crawling over or through fences without permission* *Φ Closing gates*
Veld and Forest Fires Act	101 of 1998	**Prevention of unauthorised veld and forest fires**
Transvaal Nature Conservation Ordinance	12 of 1938	**Endangered plants and wild animals. Protected fauna and flora**
Occupational Health and Safety Act	85 of 1993	**Prescribes health and safety measures necessary to adhere to for all construction workers**
National Water Act	36 of 1998	**All aspects relating to pollution of surface and ground water.**

3 SCOPE

The scope of this document is to provide environmental management guidelines to the Contractor responsible for the deviation of the Duvha-Minerva 400kV power line, in fulfilment of the requirements to the conditions of the Environmental Authorisation that was issued on the 8th of August 2008.

In terms of the National Environmental Management Act ([NEMA] No 107 of 1998) an applicant must submit an Application for authorisation of a listed activity in terms of Regulation 386 and 387 of the aforementioned Act. Such an application must be accompanied by an Environmental Management Plan. This report constitutes the fulfilment of that requirement..

In addition to the requirement of the NEMA and conditions of the said Authorisation, this document will also be used as a supplementary document to Eskom's TRMSCAAC1 REV 3;.which will eventually form part of the agreement for construction.

3.1 Purpose of the EMP

This Environmental Management Plan (EMP) has been compiled to address potential environmental impacts, during the deviation of the proposed Duvha-Minerva Tx 400kV power line. This document serves as the environmental specification to Eskom personnel and outside contractors with regard to addressing environmental issues identified prior to construction. It is the responsibility of the Project Manager and Contractor to ensure compliance with all the environmental specifications in the document as well as the relevant legislation.

This EMP should also ensure the sustainable management (to avoid and/or minimise environmental damage) of the environment whilst the construction is being undertaken. This EMP must be viewed as a contract document to which all Eskom employees and outside contractors involved in the proposed construction must be committed to.

Thus the aim of this EMP is to:

- ensure that the team are familiar with the environmental procedures to be followed and comply with all the recommendations made within it;
- ensure that a list of environmental representatives involved in the project are given to the construction team;
- ensure that an environmental incident register is implemented and maintained to address environmental impacts;
- ensure that the mitigatory measures are implemented to avoid and/or minimise the identified negative environmental impacts and to enhance the positive impact of the project on the environment; and

- ensure that a monitoring programme is in place that tracks the effectiveness of the implemented mitigatory measures.

3.2 Objectives of the EMP

The EMP has a long-term objective to ensure that:

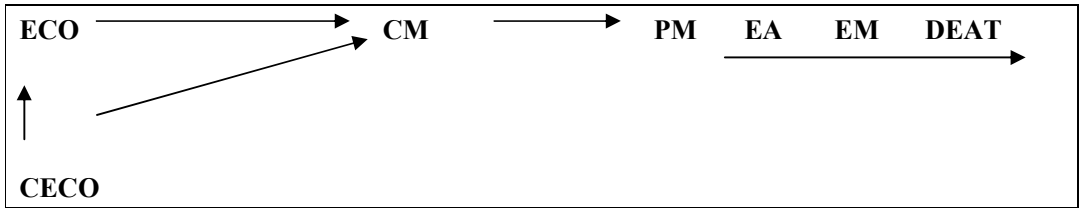
- Appropriate Environmental Management measures and requirements are implemented from the start of the project;
- Precautions against damage and claims arising from damage are taken timeously; and
- The completion date of the contract is not delayed due to problems with landowners arising during the course of construction.

3.3 Eskom and Contractor Commitment

Eskom requires a commitment from the Eskom Project Manager and the Contractor on the following issues:

- To underwrite Eskom Transmission's Environmental Policy TRMPBAAX3 Rev 2 at all times. (Please refer to Appendix E)
- Ensure that environmental conditions that are stipulated in the Environmental Authorisation are implemented;
- Resolve problems and claims arising from damage immediately to ensure a smooth flow of operations;
- To implement this Environmental Management Plan for the benefit of all involved; and
- To preserve the natural environment by limiting destructive actions on site.

3.4 Reporting Structure



ECO: Environmental Control Officer (Independent Appointment as per Environmental Authorisation obtained on the 8th of August 2008)

CM: Contract Manager (Eskom)

CECO:	Contractor Environmental Control Officer (Dedicated person)
PM:	Project Manager (Eskom)
EA:	Environmental Advisor (Eskom)
EM:	Environmental Manager (Eskom)
RA	Relevant Authority (e.g. **DEAT)**

3.5 Responsibility Matrix

Function	Name / Cell Number	Responsibility
Project Manager (PM) Eskom	Virginia Teffo 0118003129	Overall management of project and EMP implementation
Site Supervisor/ Contract Manager (CM) Eskom	GA Antoniola 0112059421	Oversees site works, liaison with Contractor, PM and ECO
Environmental Control Officer (ECO)	Rethabile Sethlabi 0118006432	Implementation of EMP and liaison between Eskom, Contractor and Landowners/stakeholders
Contractor (C)	Optic 1 0122500221	Implementation and compliance with recommendations and conditions of the EMP, Appoints dedicated person (CECO) to work with ECO
Contractor Environmental Control Officer (CECO)	Debra Jack 0217022884 0737204328	Implementation of EMP, landowner interaction, environmental control of site actions, re-mediation and rehabilitation work.
Tx Services Environmental Advisor (Eskom)	Vuledzani Thanyani 0118005601	Environmental advice and auditing

3.6 Responsibilities

3.6.1 Project Manager

The primary responsibility of the Project Manager is to ensure that the Contractor complies with the environmental specifications in this document. In addition the Project Manager shall:

- Assume overall responsibility for the effective implementation and administration of the EMP;
- Ensure that the EMP is included in the Contractor's contract;
- Ensure that the EMP is given to the applicable Construction Supervisor and the contractors;
- In conjunction with the Construction Supervisor; undertake regular inspections of the Contractor's site as well as the installation works in order to check for compliance with the EMP in terms of the specifications outlined in this document. Inspections shall take place at least once a week and copies of the monitoring checklist contained in the file (see **APPENDIX 2** for copy of the audit inspection protocol);
- Keep a register of all incidents (spills, injuries, complaints, legal transgressions, etc) and other documentation related to the EMP;
- Report to the Senior Environmental Advisor (Vuledzani Thanyani) any problems (or complaints) which cannot first be resolved in co-operation with the Contractor(s);
- Implement recommendations of possible audits; and
- Ensure that construction staff is trained in accordance with requirements of the EMP.

3.6.2 Construction Contractor

The Contractor shall:

- Ensure that the environmental specifications of this document (including any revisions, additions or amendments) are effectively implemented. This includes the on-site implementation of steps to mitigate environmental impacts;
- Discuss implementation of and compliance with this document with staff at routine site meetings;
- Preserve the natural environment by limiting any destructive actions on site;
- Monitor environmental performance and conformance with the specifications contained in this document during site inspections;
- Report progress towards implementation of and non-conformances with this document at site meetings with the Project Manager;

- Ensure that suitable records are kept and that the appropriate documentation is available to the Project Manager;
- Advise the Project Manager of any incidents or emergencies on site, together with a record of action taken;
- Report and record all accidents and incidents resulting in injury or death;
- Take into consideration the legal rights of the individual Landowner, Communities and Eskom Regional staff;
- Ensure quality in all work done, technical and environmental;
- Resolve problems and claims arising from damage immediately to ensure a smooth flow of operations;
- Underwrite Eskom's Environmental Policy at all times, and
- Use this Environmental Management Plan for the benefit of all involved.

4 ENVIRONMENTAL AUTHORISATION

The construction of power lines can have a major impact on the environment. It is thus imperative that precautions be taken to ensure that environmental damage is minimised. This will take a concerted effort from the Contractor and proper planning is of the utmost importance.

The Environmental Control Officer (ECO) shall convey the contents of this document and the conditions of the Environmental Authorisation (RoD) from the DEAT and discuss the contents in detail with the Eskom Project Manager and Contractor at a pre-construction meeting. This formal induction training is a requirement of ISO 14001 and shall be done with all main and sub-contractors. Record of the training dates, people who attended and discussion points shall be kept by the ECO.

Most landowners / adjacent landowners will see the construction period as interference with their daily activities. Good relations with adjacent landowners need to be established and sustained. Landowners shall therefore be informed timeously of the construction programme, duration and all interference with their daily activities. This will help in the solving of problems and the prevention thereof. Lines of communication should always be open to ensure proper and timeous reaction to complaints. The contact numbers of the ECO and CECO shall be made available to adjacent landowners. The reputation of both the Contractor and Eskom Transmission is at stake and should be the drive for everybody involved to perform in excellence.

The Contractor (TRMSCAAC1 REV 3 section 4.1.2) shall take all the necessary precautions against damage. The Contractor shall ensure that the correct equipment for construction purposes is available at all times to ensure construction proceeds without unnecessary damage to the environment. Should alternative methods be used, it requires approval from site staff and the ECO must be informed to ensure environmental issues are addressed.

During the construction period at least three (3) Environmental Audits shall be conducted to determine compliance with the recommendations of the EIA, RoD and EMP (This Document). These will include internal audits and external by the DEAT or the ISO14001 auditors or combined audits.

5 TECHNICAL SPECIFICATIONS

5.1 Length

The length of the line will be approximately 15km.

5.2 Construction area

The servitude width is 55m. Construction is limited to the width of the servitude in which the line will be constructed.

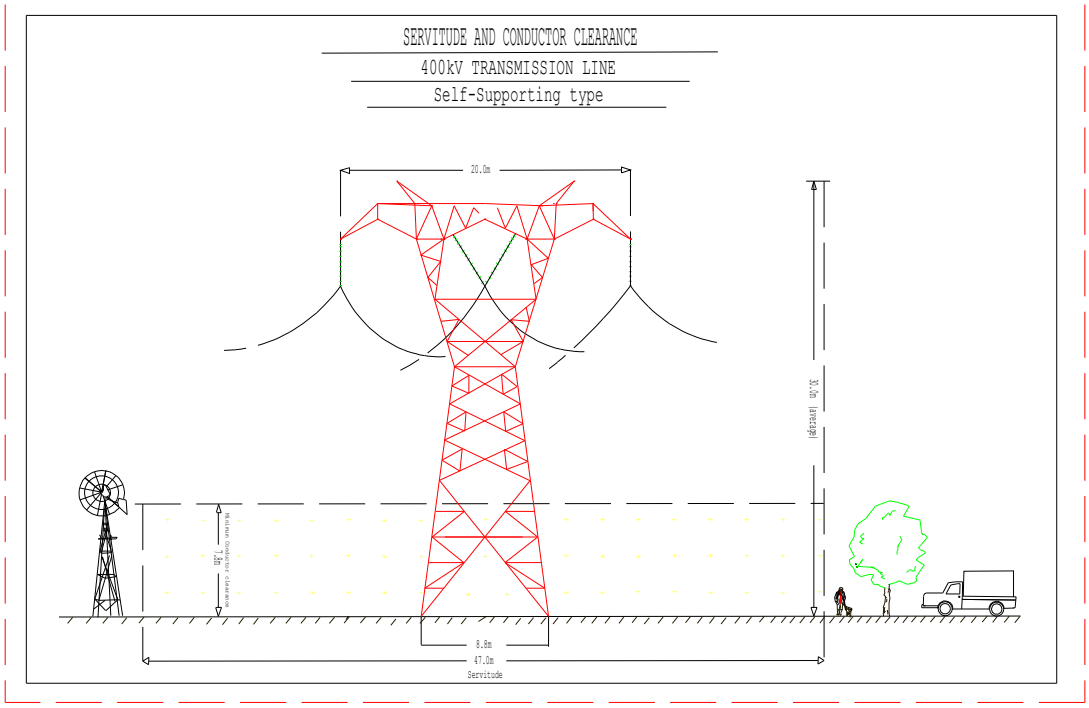
5.3 Tower Parameters

Tower spacing	:	350m. (Average)
Tower height	:	30m. (Average)
Conductor attachment height	:	25m (Average)
Conductor type `	:	Triple dinosaur conductor. (Self-supporting suspension/strain tower)

5.4 Tower Design

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

- Self-supporting suspension tower.
- Self-supporting strain tower.



5.5 Major Activities of the Project

The project involves 21 major activities of which 5 are completed already. These are:

1. Environmental Impact Study – Copy of an Environmental Authorisation appended to this document;
2. Negotiations for the servitude –the site belongs to Eskom Holdings Limiited
3. Land survey to determine the exact routing of the line and tower placement;
4. Profiling work to produce the profiles for construction; and
5. Pegging of bend tower by a Transmission surveyor.

The following activities are still to be performed and will take approximately four (4) months to complete:

1. Erection of camp sites for the Contractors' workforce;
2. Servitude gate installation to facilitate access to the construction site

3. Vegetation clearing to facilitate access, construction and the safe operation of the line;
4. Dismantling of the existing line in preparation for deviation
5. Pegging of tower positions for construction by the contractor;
6. Transportation of equipment, materials and personnel to site and stores;
7. Installation of foundations for the towers;
8. Tower assembly and erection;
9. Conductor stringing and regulation;
10. Taking over the line from the contractor for commissioning;
11. Final inspection of the line, commissioning and hand over to the Grid Line and Servitude Manager for operation;
12. Rehabilitation of disturbed areas and sign;
13. Signing off.
14. Handing over of the transmission power line asset all Landowners upon completion of the construction and rehabilitation;
15. Handing over and taking over of the servitude by the Grid Environmental Manager; and
16. Commissioning and Operation and maintenance of the line by the Grid.

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

6 ENVIRONMENTAL MANAGEMENT MEASURES

The management measures documented in each of the sections below have been compiled using the following information:

1.) Impact Assessment and mitigation measures documented in the Final EIR for the Minerva-Duvha Deviation.

2.) The conditions documented in the Environmental Authorisation received on the 8th of August 2008.

3.) The standard EMP utilised by ESKOM : Transmission for the construction of power lines.

6.1 Construction Initiation

Objectives	• Ensure that all necessary legal obligations and contractual conditions have been met prior to the commencement with construction; • To ensure that all role players and stakeholders are aware of the pending construction activities and have received timeous notice; and • To ensure that power outages are avoided wherever possible during the construction phase.

No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Pre-Construction Phase								
1	Labour Issues	Eskom must appoint a suitably qualified Environmental Officer (hereafter referred to as ECO) who would act on behalf of the applicant, on a daily basis, monitor project compliance with the conditions of environmental authorisation, environmental legislation and the recommendations of the revised EMP. This role will be fulfilled by the appointed ECO and CECO.	Throughout Project	Daily	PM	EA	EM	C
		The ECO / CECO must be appointed prior to the commencement of construction and pre-construction related activities and the authorities must be notified of such and appointment.	Throughout Project	Once off	PM	EA	EM	C / RA

		The ECO / CECO shall remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is handed over to Eskom by the contractor for operation;	Throughout Project	Daily	PM	EA	EM	C
		The ECO shall maintain the following on site: • A daily site dairy; • A non-conformance register; and • A public complaint registers.	Throughout Project	Daily	CECO	ECO	EA SM	EM PM
2	Initiation	The authorised activity / activities may not commence within thirty (30) days of the date of signature of the authorisation;	Prior to authorisation	Once off	PM	PM SM	EM EA ECO	RA C
		Should Eskom be notified by the minister of a suspension of the authorisation pending appeal procedures, Eskom may not commence with the activity / activities unless authorised by the minister in writing.	Throughout Project	Throughout Project / as and when necessary	PM	PM SM	EM EA ECO	RA C
		Fourteen (14) days written notice must be given to the Department that the activity will commence. Commencement for the purposes of this condition includes site preparation. The notice must include a date on which it is anticipated that the activity will commence. This notification may coincide with the period contemplated in Section 14.9.4.1 above;	Prior to commencement	Once - off	CECO	PM SM	EA EM ECO	RA
		Fourteen (14) days written notice must be given to the Department that the operational phase of the activity will commence.	14 days	Prior to operation commencement	CECO	PM SM	EA EM ECO	RA

		A copy of the authorisation must be kept at the property where the activity will be undertaken. The authorisation must be produced to any authorised official of the Department who requests to see it and must be made available for inspection by any employee or agent of the holder of the authorisation who works or undertake work at the property;	Throughout	Monthly Inspection	CECO	SM	EA	EM PM
		No work shall commence until permission is granted from the Environmental Advisor from Transmission Services and acceptance of this proposal and EMP from DEAT has been obtained.	Prior to commencement	Once-off	SM C	PM	ECO	EA EM
		Obtain a signed agreement statement from the contractor indicating their willingness to comply to the EMP.	Prior to commencement	Once - off	CECO C	SM	ECO	PM EA EM
Construction Phase								
1	Construction Initiation	Ensure that the grid is considered throughout the construction phase.	Throughout construction	Throughout construction	C	SM	ECO	PM EA EM
		Where any of the applicant's contact details change, including then name of the responsible person, the physical or postal address and/or telephonic details, the applicant must notify the Department as soon as the new details become known to the applicant;	Throughout construction	Throughout construction	SM	PM	ECO	EA EM RA
		The holder of the authorisation must notify the Department, in writing and within 24 hours, if conditions of the authorisation cannot be or is not adhered to. In all other cases, the holder of the authorisation must notify the Department, in writing, within 48 hours if a condition of the authorisation is not adhered to. Any notification in terms of this condition must be accompanied by reasons for the non-compliance; and	Prior to commencement	Once off	CECO	SM	ECO EA	PM EM RA

		Non-compliance with a condition of this authorisation may result in criminal prosecution or other actions as per the National Environmental Management Act, 1998 and the regulations.	Throughout	Throughout	CECO	SM	ECO EA	PM EM RA
2	Labour Issues	Ensure proper supervision of employees at all times.	Throughout	Throughout	C	SM	ECO EA	PM EM RA
Rehabilitation Phase								
None								
Operational Phase								
None								

6.2 Site Establishment and Demarcation

Objectives	
	Project Area • Ensure proper demarcation of the project area prior to construction; • Ensure timely notice and negotiation with stakeholders in the event that access is required for construction purposes; and • Ensure that all areas impacted during construction are rehabilitated to suitable levels. **Gate Installation** • Properly installed gates to allow access to the servitude; • Minimise damage to fences; and • Limit access to Eskom and Contractor personnel with gate keys. **Servicing Vehicles** • Prevention of pollution of the environment; and • Minimise chances of transgression of the acts controlling pollution. **Batching Plants** • To ensure all agreements with Landowners are adhered to; • Prevention of complaints from stakeholders; and • Successful rehabilitation of disturbed areas. **Wet Areas** • Avoid impact to wet areas. **Sanitation** • Ensure that proper sanitation is received.

No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Pre-Construction Phase								
1	Gate Installation and Control	No new gate construction is anticipated, however, if needed the contractor must refer to the Fencing Act, Act no 31 of 1963.	Not anticipated	Throughout Project	C CECO	SM	ECO	EA EM PM
		Gate installation shall be according to TRMSCAAC1 REV 3 section 4.5 and the drawing 0.00/10261 Rev 2 as stated in the specifications.	Not anticipated	Once -off	C CECO	SM	ECO	EA EM PM
		All gates installed in electrified fencing shall be re-electrified.	Not anticipated	Once -off	C CECO	SM	ECO	EA EM PM
		The Environmental Control Officer shall approve	Not	Once -off	C	SM	ECO	EA

		gate positions.	anticipated		CECO			EM PM
		All gate positions shall be three (3) metres off centre to allow for continued access when stringing takes place.	Not anticipated	Once -off	C CECO	SM	ECO	EA EM PM
2	Batching Plants	The sitting, if necessary, of batching plants shall be done in conjunction with the Eskom PM and the ECO.	Not anticipated	Once -off	C CECO	SM	ECO	EA EM PM
		Refer to TRMSCAAC1 REV 3 section 4.8 for specifications regarding batching plants.	Pre-Construction	Once off	C CECO	SM	ECO	EA EM PM
		Ensure all agreements reached with the Landowner are fulfilled.	Pre-Construction	Once -off	C CECO	SM	ECO	EA EM PM
3	Sanitation	The Contractor shall install mobile chemical toilets on site (TRMSCAAC1 REV 3). The Contractor camp shall have the necessary ablution facilities with chemical toilets where such facilities are not available at commencement of construction.	Throughout	Weekly	C CECO	SM	ECO	EA EM PM
		The Contractor will be responsible for the provision of and proper utilisation, maintenance and management of toilet, wash and waste facilities. Toilet facilities supplied by the contractor for the workers shall occur at a maximum ratio of 1 toilet per 15 workers. All temporary / portable toilets shall be secured to the ground to prevent them from toppling due to wind or any other cause.	Throughout construction	Daily	C CECO	SM	ECO	EA EM PM
		Prior to the establishment of the ablution facilities, the Site Manager must approve an appropriate location.	Pre-Construction	Once-off	C CECO	SM	ECO	EA EM PM
		The entrances to the ablution facilities shall be adequately screened from public view.	Pre-Construction	Once-off	C CECO	SM	ECO	EA EM PM

4	Site Establishment – Contractors camp, wastewater management, Shower facilities	The contractor's camp shall be sited so as to cause the least amount of disturbance to adjacent landowners.	Pre-Construction	Once-off	C CECO	SM	ECO	EA EM PM
		The contractor's camp shall be fenced and the contractor shall maintain in good order all fencing for the duration of the construction activities.	Throughout Construction	Weekly	C CECO	SM	ECO	EA EM PM
		Site establishment shall take place in an orderly manner and all amenities shall be installed at Camp sites before the main workforce move onto site.	Pre-construction	Monthly	C CECO	SM	ECO	EA EM PM
		The Contractor shall supply a wastewater management system that will comply with legal requirements and be acceptable to Eskom. A septic tank system is recommended to ensure the best practice environmental solution.	Pre-Construction	Once-off	C CECO	SM	ECO	EA EM PM
		Where Eskom facilities are available the Contractor shall make use of such facilities where it is viable and negotiated with the Grid.	Pre-Construction	Once-off	C CECO	SM	ECO	EA EM PM
		Should shower facilities be provided for the use by staff staying on site, the following controls must be imposed: • Positioning of the shower, and specifically its discharge point, will be carried out to ensure that erosion and build up detergents does not occur; • All discharge from the shower and other washing facilities must pass through a suitable filter to reduce the load of detergents to the environment; • Filtered water discharge may thereafter be released to the environment, but mechanisms will be investigated to ensure that the water is evenly dispersed so as to lead to "greening up" and / or swampy	Throughout Construction	Daily	C CECO	SM	ECO	EA EM PM

		conditions in one limited area; • Use of the shower facilities must be limited to staff or authorised persons only.						
		The cooking area will be positioned such that no vegetation is in close proximity thereto, including overhanging trees. An area around the cooking area will be cleared such that any escaping embers will not start an uncontrolled fire.	Pre-Construction	Once-off	C CECO	SM	ECO	EA EM PM
5	Eating Areas	Eating areas shall be designated and demarcated.	Pre-Construction	Once-off	C CECO	SM	ECO	EA EM PM
		Sufficient bins shall be present in this area for all waste material.	Pre-Construction	Once-off	C CECO	SM	ECO	EA EM PM
		Dish washing facilities shall be provided. These may be very basic, but a process must be put in place to ensure that wastewater is disposed of appropriately (see Site Establishment - showers).	Pre-Construction	Once-off	C CECO	SM	ECO	EA EM PM
Construction Phase								
1	Gate Installation and Control	All gates shall be fitted with locks and be kept locked at all times.	Throughout	Throughout	C CECO	SM	ECO	EA EM PM
		Gates shall only be left open on request of the Landowner if he accepts partial responsibility for such gates in writing.	When necessary	When necessary	C CECO	SM	ECO	EA EM PM
		Claims arising from gates left open shall be investigated and settled in full by the Contractor.	When necessary	When necessary	C CECO	SM	ECO	EA EM PM
		If any fencing interferes with the construction process, such fencing shall be deviated / protected until construction is completed.	When necessary	When necessary	C CECO	SM	ECO	EA EM PM
2	Project Area	Construction activities are limited to the area as demarcated by EA / EM within the site identified for the construction of the Power Station.	Throughout Project	Monthly	C CECO	SM	ECO	EA EM PM
		Any area outside the construction area, required	Throughout	Monthly	C	SM	ECO	EA

		to facilitate access, construction activities, construction camps or material storage areas, where necessary, shall be negotiated with the affected stakeholders and written agreements shall be obtained.	Project		CECO			EM PM
		All construction areas shall be cleared in accordance with the EA / EM Standard for Bush clearing ESKASABG3.	Throughout Project	Monthly	C CECO	SM	ECO	EA EM PM
		Any extra space to be cleared outside the construction area shall be negotiated and approved by EA / EM. All areas marked as no go areas inside the substation parameters shall be treated with the utmost care and responsibility.	Throughout Project	Monthly	C CECO	SM	ECO	EA EM PM
3	Batching Plants	The batching plant area shall be operated in such a way as to prevent contaminated water to run off the site and polluting nearby streams or water bodies. To this effect diversion berms can be installed to direct all wastewater to a catchments area.	Throughout Construction	Weekly	C CECO	SM	ECO	EA EM PM
4	Sanitation	Staff shall be sensitised to the fact that they should use these toilets at all times. The Contractor shall inform all site staff to make use of supplied ablution facilities and under no circumstances shall indiscriminate excretion and urinating be allowed other than in supplied facilities.	Throughout Construction	Daily	C CECO	SM	ECO	EA EM PM
		No use of the veld shall be allowed, as this always creates problems with the landowners and may lead to claims for problems with stock diseases.	Throughout Construction	Daily	C CECO	SM	ECO	EA EM PM
		Toilet paper is also a source of littering, and the Contractor shall be forced to clean up any litter.	Throughout Construction	Daily	C CECO	SM	ECO	EA EM PM
		Ablution facilities must be maintained in a hygienic state and serviced regularly. Toilet	Throughout Construction	Daily	C CECO	SM	ECO	EA EM

		paper will be provided.						PM
		The Contractor will ensure that no spillage occurs when the toilets are cleaned or emptied and that a licensed provider removes the contents from the site.	Throughout Construction	Weekly	C CECO	SM	ECO	EA EM PM
		Disposal of such waste is only acceptable at a licensed waste disposal facility.	Throughout Construction	Weekly	C CECO	SM	ECO	EA EM PM
5	Site Establishment	The site must be kept tidy and hygienic at all times with special reference to sanitation & water management.	Throughout Construction	Weekly	C CECO	SM	ECO	EA EM PM
		Open uncontrolled fires will be forbidden at the site camp. Rather "contained" cooking mechanisms will be used – e.g. gas stoves or an enclosed braai facility.	Throughout Construction	Weekly	C CECO	SM	ECO	EA EM PM
		Where possible and practical all maintenance of vehicles and equipment shall take place in the workshop area.	Throughout Construction	Weekly	C CECO	SM	ECO	EA EM PM
		Workshop areas shall be monitored for oil and fuel spills and such spills shall be cleaned and remediate to the satisfaction of the ECO.	Throughout Construction	Weekly	C CECO	SM	ECO	EA EM PM
		The Contractor shall be in possession of an emergency spill kit that must be complete and available at all times on site.	Throughout Construction	Weekly	C CECO	SM	ECO	EA EM PM
		No equipment shall be used which may cause irreparable damage to wet areas. The contractor shall use alternative methods of construction in such areas. **Refer to TRMSCAAC1 REV 3 section 4.4.1 regarding access through seasonally wet areas.**	Throughout Construction	Daily	C CECO	SM	ECO	EA EM PM
6	Eating areas	The feeding of, or leaving of food for animals, is strictly prohibited.	Throughout Construction	Monthly	C CECO	SM	ECO	EA EM PM
		No fires for the purpose of cooking or warming purposes will be permitted other than within	Throughout Construction	Daily	C CECO	SM	ECO	EA EM

		designated areas, for instance, at the site camp.						PM
Rehabilitation Phase								
1	Batching Plants	All areas used as batching areas must be rehabilitated once construction is completed. Should any claim be instituted against EA / EM, due to the actions of the Contractor at a batching plant site, EA / EM shall hold the Contractor fully responsible for the claim until such time that the Contractor can prove otherwise with the necessary documentation.	Once Construction is completed – during rehabilitation	Monthly	C CECO	SM	ECO	EA EM PM
2.	Site Decommissioning	All areas where site infrastructure or camp sites are established must be rehabilitated to their original state in which they were found.	Once Construction is completed – during rehabilitation	Monthly	C CECO	SM	ECO	EA EM PM
		Prior to the removal of structures an assessment of the end land use will be undertaken to determine which structures will be removed or retained.	Once Construction is completed – during rehabilitation	Monthly	C CECO	SM	ECO	EA EM PM
		Any specific requirements to prevent pollution during demolition of structures must be identified prior to the commencement of rehabilitation activities.	Prior to rehabilitation	Once - off	C CECO	SM	ECO	EA EM PM
		Disposal requirements must be identified prior to the commencement of rehabilitation or structure removal.	Prior to rehabilitation	Once - off	C CECO	SM	ECO	EA EM PM
		Equipment, structures and building material that can be reused will be identified prior to the commencement of rehabilitation activities.	Prior to rehabilitation	Once - off	C CECO	SM	ECO	EA EM PM
		Scrap metal and equipment will be sold as scrap or disposed of at a suitably licensed facility.	Once Construction is completed	Monthly	C CECO	SM	ECO	EA EM PM

			– during rehabilitation					
		Vegetation that was removed for the establishment of site infrastructure shall be reinstated into the area.	Once Construction is completed – during rehabilitation	Monthly	C CECO	SM	ECO	EA EM PM
Operational Phase								
1	Gate Control	Gates must be fitted with Eskom locks.	Permanent	Throughout	C CECO	SM	ECO	EA EM PM
		Such gates shall be clearly marked by painting the posts green.	After construction – once off	Once off	C CECO	SM	ECO	EA EM PM

6.3 Water Management (including Storm water, Water Sources, Wet Areas)

Objectives	**Storm-water Management** • Effectively control storm water runoff to ensure that impacts to surface water resources are controlled, and erosion is not present on site. **River Crossings** • Minimise damage to river and stream embankments; • No access roads through river and stream banks; • No visible erosion scars on embankments once construction is completed; and • Minimise erosion of embankments and subsequent siltation of rivers, streams and dams. **Wetlands** • No construction activities within designated wetland areas as identified in the EIA; and • No pollution or effluent is to come in contact with wetland areas.

No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Pre-Construction Phase								
1	Water Sources	Should water be required from sources other than Eskom supply, a written agreement shall be reached between the Contractor and the stakeholder involved.	Throughout Project	When necessary	C CECO	SM	ECO	EA EM PM
		Should the Contractor be required to use water from a natural source, the Contractor shall supply a method statement to that effect and obtain the required permits. No construction shall take place in the wetland, streams and other river courses	Throughout Project	Monthly	C CECO	SM	ECO	EA EM PM

		without the necessary water license form the Department of Water Affairs and Forestry;						
None								
Construction Phase								
1	Water Sources	Strict control shall be maintained and the ECO shall regularly inspect the abstraction point and methods used.	Throughout Project	Weekly	C CECO	SM	ECO	EA EM PM
2	Wetlands	No construction is to take place in wetland areas. Including no vehicular traffic in wet areas / wetlands.	Throughout Project	Weekly	C CECO	SM	ECO	EA EM PM
		Only existing roads through such areas may be used with the approval of Eskom.	Throughout Project	Monthly	C CECO	SM	ECO	EA EM PM
		The contractor shall use alternative methods of construction in such areas. **Refer to TRMSCAAC1 REV 3 section 4.4.1 regarding access through seasonally wet areas.**	Throughout Project	Monthly	C CECO	SM	ECO	EA EM PM
		Berms should be created not closer than 10m from identified wetland areas, so as to ensure that no construction material and/or waste flow into wetland systems.	Throughout Project	When necessary	C CECO	SM	ECO	EA EM PM

3	Dust control	The dust control measures, such as watering, chemical stabilisation and the reduction of surface wind speed through the use of windbreaks and source enclosures must be put in place during construction activities. Emission control efficiencies of 50% can readily be achieved through the implementation of effective watering programme for unpaved roads and material handling points.	During construction	Monthly	C CECO	SM	ECO	EA EM PM
4	Storm water Management	Storm water shall be channelled away from construction activities.	Prior to commencement of Construction	Once-off	C CECO	SM	ECO	EA EM PM
		No storm water may be discharged into areas where construction is taking place.	Prior to commencement of Construction	Once-off	C CECO	SM	ECO	EA EM PM
		Storm water flowing from the footprint of the proposed development may not be contaminated by any substances, whether the substance is solid, liquid or vapour or any combination thereof.	Throughout Construction	Weekly	C CECO	SM	ECO	EA EM PM
		During construction, the Contractor will protect areas susceptible to erosion by installing necessary temporary and / or permanent drainage	Prior to commencement of	Once-off	C CECO	SM	ECO	EA EM PM

		works as soon as possible and by taking suitable measures to prevent surface water concentration into nearby roadways or river courses.	Construction					
		Silt trap mechanisms will be installed on all temporary storm water channels. These silt traps will be regularly checked and serviced as required.	Throughout Construction	Monthly	C CECO	SM	ECO	EA EM PM
		All excavated and filled slopes and stockpiles must be of a stable angle and capable of accommodating normal expected flows.	Throughout Construction	Monthly	C CECO	SM	ECO	EA EM PM
		Stabilisation of cleared areas to prevent and control erosion will be actively managed. The method chosen (e.g. watering, planting, retaining structures, commercial anti-erosion compounds) will be selected according to specifics and ensure acceptable rehabilitation.	Throughout Construction	Monthly	C CECO	SM	ECO	EA EM PM
		Traffic and movement over stabilised areas will be restricted. Any damage to stabilised areas will be repaired and maintained to the satisfaction of the Site Manager.	Throughout Construction	Monthly	C CECO	SM	ECO	EA EM PM
		Where erosion and sedimentation occur, rectification will be carried out in accordance	Throughout Construction	Monthly	C CECO	SM	ECO	EA EM PM

		with details specified by the Site Manager.						
Rehabilitation Phase								
1	Storm water Management	Any runnels or erosion channels will be backfilled and compacted, and the areas restored to a proper condition.	Throughout Construction	Monthly	C CECO	SM	ECO	EA EM PM
Operational Phase								
None								

6.4 Hazardous Substance Spills

Objectives	
	• To ensure that spills occurring during the construction phase a suitably managed to reduce potential impacts on the environment.

No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Pre-Construction Phase								
1	Hazardous Spills	Ensure that potential hazardous materials on site are identified and documented in a register.	Throughout Project	Once-off	C CECO	SM	ECO	EA EM PM
		Ensure that suitable spill kits and absorption materials are purchased prior to commencement with construction, and stored suitably in places where there is a high risk of hazardous spills occurring.	Throughout Project	Monthly	C CECO	SM	ECO	EA EM PM

Construction Phase								
1	Hazardous Spills	All contaminated soil / yard stone shall be removed and be placed in containers. Contaminated material can be taken to one central point where bio-remediation can be done.	Throughout Project	When-necessary	C CECO	SM	ECO	EA EM PM
		Smaller spills can be treated on site. (ESKASABTO)	Throughout Project	When-necessary	C CECO	SM	ECO	EA EM PM
		A specialist Contractor shall be used for the bio-remediation of contaminated soil where the required remediation material and expertise is not available on site.	Throughout Project	When-necessary	C CECO	SM	ECO	EA EM PM
		All spills of hazardous substances must be reported to the ECO and appointed Transmission Engineering Environmental Advisor (Tx Key Performance Indicator requirement).	Throughout Project	When-necessary	C CECO	SM	ECO	EA EM PM
Rehabilitation Phase								
1	Hazardous Spills	Ensure that rehabilitated areas are free of visible spills and are suitably vegetated.	Throughout Project	When-necessary	C CECO	SM	ECO	EA EM PM
Operational Phase								
None								

6.5 Delivery of Materials

Objectives	
	• To ensure that all sub-contractors responsible for delivering materials to site operate in an environmentally friendly manner whilst on site; and • To ensure that the activities related to material deliveries do not create an unnecessary impact on the environment.

No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Pre-Construction Phase								
1	Heavy machinery	All drivers and operators must be appropriately licensed.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM
Construction Phase								
1	Heavy machinery	No vehicles coming on sites must spill oil.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM
		No construction equipment, vehicles or unauthorised personnel will be allowed onto areas that have been re-vegetated.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM
Rehabilitation Phase								
1	Heavy Machinery	All areas where heavy machinery has access must be rehabilitated in terms of soil pollution.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM
Operational Phase								
1	Heavy Machinery	No oil/ petrol spills / leaks may occur.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM

6.6 Building, Civil's and Structural Steel Work

Objective	• To ensure that all construction related activities including civils, building erection, and structural steel work is undertaken in such a manner that it reduces unnecessary impact to the environment.

No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Pre-Construction Phase								
None								
Construction Phase								
1	Excavate foundations	During excavations no oil leaks from heavy vehicles may occur.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM
		PPE must be used by all workers using hand tools during the excavations of foundations.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM
		Spoil must be evenly spread.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM
2	Excavate earth moving materials	During the excavation of earth materials no oil leaks may occur from heavy vehicles.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM
3	Mixing concrete	During the mixing of concrete, concrete dust is emanated. Workers mixing concrete must wear	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM

		PPE.						
		Cement bags must not become litter after use. They must be disposed of in bins/skips (see Waste Management).	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM
4	Trenches	All workers using hand tools must make use of PPE.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM
		No spills may occur. All spills should be reinstated into foundations as backfill.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM
5	Cast Blinding Layer	No concrete spills may occur. All spills should be reinstated into foundations as backfill.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM
6	Place Copper Earthing	All copper off-cuts must be collected for recycling purposes.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM
7	Construct Cable	No concrete spills may occur. All spills should be reinstated into foundations as backfill.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM
8	Place steelwork on foundations	All steel off-cuts must be collected for recycling purposes.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM
		During steel cutting and grinding, all old discs must be managed and must not become litter.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM

9	Connect earthing to steelwork	During welding and brazing, all old welding rods must be managed and must not become litter.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM
10	Reinstate yard stone	No oils spills may occur as a result of heavy vehicles.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM
		Workers with rakes must use PPE at all times.	Throughout construction	Monthly	C CECO	SM	ECO	EA EM PM
Rehabilitation Phase								
1	De-establish contractors yard / store	All waste, garbage, surplus materials and oils spills to be cleared and site must be rehabilitated.	During Rehabilitation	Weekly	C CECO	SM	ECO	EA EM PM
2	Final inspection	During site inspection the site is to be cleared and rehabilitated back to its original state.	During Rehabilitation	Weekly	C CECO	SM	ECO	EA EM PM
Operational Phase								
1	Take over works	During site take / hand over the site must be accepted from the contractor and handed over.	Operations	Once - off	C CECO	SM	ECO	EA EM PM

6.7 Circuit Breakers and Current Transformers

Objective	
	• See deliveries, site establishment, and civils and structural steel work.

No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Pre-Construction Phase								
1	Supply and delivery of new circuit breakers and current transformers	All drivers and operators delivering new circuit breakers and current transformers must be licensed to obey all road and local by-laws.	Throughout Project	Monthly	C CECO	SM	ECO	EA EM PM
Construction Phase								
1	Establish contractor on site	(See Site Establishment).						
2	Install new cables, clamps and conductors	The crane operators must be licensed in accordance with the OHS Act.	Throughout Project	Monthly	C CECO	SM	ECO	EA EM PM
Rehabilitation Phase								
1	Clear site	The site must be cleared and rehabilitated so that there is no damage to the surrounding infrastructure.		Weekly	C CECO	SM	ECO	EA EM PM

		All personal must be suitably accredited to perform duties.		Monthly	C CECO	SM	ECO	EA EM PM
		All cable cut offs must be collected and sent for recycling.	Throughout Project	Monthly	C CECO	SM	ECO	EA EM PM
		All waste, garbage, scrap and oil spill must be disposed of (see Waste Management). The site must be cleared and rehabilitated.	Throughout Project	Monthly	C CECO	SM	ECO	EA EM PM
2	Final Inspection	During site inspection the site is to be cleared and rehabilitated back to its original state.	On termination of construction	Weekly	C CECO	SM	ECO	EA EM PM
Operational Phase								
1	Take over works	During site take / hand over the site must be accepted from the contractor and handed over.	On termination of construction	Once-off	C CECO	SM	ECO	EA EM PM

6.8 Access Roads

Objectives	
	• Minimise damage to existing access roads; • Minimise damage to environment due to construction and rehabilitation of new access roads; and • Minimise loss of topsoil and enhancement of erosion.

No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Pre-Construction Phase								
1	Access Roads	If required, planning of access routes must be done in conjunction between the Contractor and Eskom.		As necessary	C CECO	SM	ECO	EA EM PM
		All agreements reached shall be documented in writing and no verbal agreements should be made.	Throughout Project	Throughout Project	C CECO	SM	ECO	EA EM PM
		The condition of existing access / private roads to be used shall be documented with photographs.	Prior to construction	Once-off	C CECO	SM	ECO	EA EM PM
		The Contractor shall properly mark all access roads.	Prior to construction	Once-off	C CECO	SM	ECO	EA EM PM
		Markers shall show the direction of travel.	Prior to construction	Once-off	C CECO	SM	ECO	EA EM PM
		Roads not to be used shall be marked with a "**NO ENTRY** "sign (refer also TRMSCAAC1 REV	Prior to	Once-off	C CECO	SM	ECO	EA EM

		3).	construction					PM
		Where required, speed limits shall be indicated and speed control measures applied on the roads.	Prior to construction	Once-off	C CECO	SM	ECO	EA EM PM
		Water diversion berms shall be installed from the start of the contract in accordance with TRMSCAAC1 REV 3 Section 4.6.	Prior to construction	When necessary	C CECO	SM	ECO	EA EM PM
		Where berms are installed on severe slopes the outflow shall be suitably stone pitched to prevent erosion from starting at the base of the berm.	Prior to construction	When necessary	C CECO	SM	ECO	EA EM PM
		All structures shall be properly designed and drawings shall be available for reference purposes.	Prior to construction	Once-off	C CECO	SM	ECO	EA EM PM
		Permanently wet areas are shown on the profiles. No vehicular traffic shall be allowed in such areas. Only existing roads through such areas may be used with the approval of Eskom and the Landowner.	Throughout construction		C CECO	SM	ECO	EA EM PM
Construction Phase								
1	Access Roads	All speed limits shall be strictly adhered to at all times.			C CECO	SM	ECO	EA EM PM

		Where new access roads are constructed, this must be done in accordance with TRMSCAAC1 REV 3 Section 4.4.	Throughout construction		C CECO	SM	ECO	EA EM PM
		These berms shall be maintained at all times.	Throughout construction		C CECO	SM	ECO	EA EM PM
		No roads shall be constructed on slopes of more than 20% unless such roads follow contours.	Throughout construction		C CECO	SM	ECO	EA EM PM
		In such areas the Contractor shall only use existing roads or alternative methods of construction. The Contractor shall take such areas into consideration during the tender.	Throughout construction		C CECO	SM	ECO	EA EM PM
		The installation of concrete pipes and drifts, to facilitate access, shall be at the discretion of the Environmental Control Officer on site.	Throughout construction		C CECO	SM	ECO	EA EM PM
		Any dangerous crossings shall be marked as such and where necessary, speed limits shall be enforced.	Throughout construction		C CECO	SM	ECO	EA EM PM
		All existing private access roads used for construction purposes, shall be maintained at all times to ensure that the local people have free access to and from their properties.	Throughout construction		C CECO	SM	ECO	EA EM PM

Rehabilitation Phase								
1	Access Roads	Berms must be repaired at the end of the contract.	End of contract		C CECO	SM	ECO	EA EM PM
		Upon completion of the project all roads shall be repaired to their original state.	End of contract		C CECO	SM	ECO	EA EM PM
Operational Phase								
None.								

6.9 Waste Management

Objectives	• To keep the construction site and servitude neat and clean. • Disposal of rubble and refuse in an appropriate manner • Minimise litigation • Minimise neighbour complaints • No visible concrete spillage on the servitude							
No.	**Activity**	**Mitigation Measures**	**Duration**	**Frequency**	**Responsibility**	**Accountable**	**Contacted**	**Informed**
Pre-Construction Phase								
1	Refuse and Rubble Removal	A method statement is required from the Contractor that includes the layout of the camp, management of ablution facilities and waste management.		Once-off	C CECO	SM	ECO	EA EM PM
		The Contractor camp shall have the necessary ablution facilities with chemical toilets where such facilities are not available at commencement of construction.		Once-off	C CECO	SM	ECO	EA EM PM
		The Contractor shall provide a wastewater management system that will comply with legal requirements and be acceptable to Eskom.			C CECO	SM	ECO	EA EM PM
		The Contractor will supply waste collection bins where such is not available and all solid waste collected shall be disposed of at a registered		Once-off	C CECO	SM	ECO	EA EM PM

		waste disposal facility.						
		A certificate of disposal shall be obtained by the Contractor and kept on site. All waste generated during construction and operation of the facility must be removed and disposed of at a waste disposal facility permitted in terms of Section 20 of the Environment Conservation Act, 1989 (Act 73 of 1989);		Monthly	C CECO	SM	ECO	EA EM PM
		In the case where a registered waste site is not available close to the construction site, the Contractor will be responsible to provide a method statement with regard to waste management.		Once-off	C CECO	SM	ECO	EA EM PM
		Under no circumstances may solid waste be burned on site unless a suitable incinerator is available.		Throughout	C CECO	SM	ECO	EA EM PM
		The Contractor shall supply waste collection bins where such is not available, as approved by the Environmental Control Officer, and all solid waste collected shall be disposed of at a registered waste dump.		Throughout	C CECO	SM	ECO	EA EM PM
		A certificate of disposal shall be obtained by the Contractor and kept on file.		Monthly	C CECO	SM	ECO	EA EM PM

		Where a registered waste site is not available close to the construction site, the Contractor shall provide a method statement with regard to waste management.		Once-off	C CECO	SM	ECO	EA EM PM
		The disposal of waste shall be in accordance with all relevant legislation.		Throughout	C CECO	SM	ECO	EA EM PM
Construction Phase								
1	Refuse and Rubble Removal	The Contractor shall dispose of all excess material on site in an appropriate manner and at a designated place.		Throughout	C CECO	SM	ECO	EA EM PM
		All packaging material shall be removed from site and disposed of and not burned on site.		Throughout	C CECO	SM	ECO	EA EM PM
		No landfill may be used without the consent from the Landowner.		Throughout	C CECO	SM	ECO	EA EM PM
		Should a landfill be used for biodegradable materials only, the rubble shall be compacted and at least 1m of soil shall cover the waste material.		Throughout	C CECO	SM	ECO	EA EM PM
		No hazardous material, e.g. oil or diesel fuel shall be disposed of in any unregistered waste site.		Throughout	C CECO	SM	ECO	EA EM PM
		No material shall be left on site that may harm			C CECO	SM	ECO	EA EM PM

		man or animals.						
		Any broken insulators shall be removed and all shards picked up.		Daily	C CECO	SM	ECO	EA EM PM
		Broken, damaged and unused nuts, bolts and washers shall be picked up and removed from site.		Daily	C CECO	SM	ECO	EA EM PM
		Surplus concrete may not be dumped indiscriminately on site, but shall be disposed of in designated areas as agreed by the Landowner. Concrete trucks shall not be washed on site after depositing concrete into foundations. Any spilled concrete shall be cleaned up immediately.		Monthly	C CECO	SM	ECO	EA EM PM
		Under no circumstances may solid waste be burned on site unless a suitable incinerator is available.		Daily	C CECO	SM	ECO	EA EM PM
		The Contractor shall dispose of all excess material on site in an appropriate manner and at a designated place.		Throughout	C CECO	SM	ECO	EA EM PM
		All packaging material must be removed from the site and disposal of and not burned on site.		Throughout	C CECO	SM	ECO	EA EM PM

		No material shall be left on site that may harm man or animals.		Throughout	C CECO	SM	ECO	EA EM PM
		Any broken insulators shall be removed and all shards picked up.		Daily	C CECO	SM	ECO	EA EM PM
		Broken, damaged and unused nuts, bolts and washers shall be gathered and removed from site.		Throughout	C CECO	SM	ECO	EA EM PM
		Surplus concrete may not be dumped indiscriminately on site and will be disposed of in designated areas as agreed by the Landowner.		Throughout	C CECO	SM	ECO	EA EM PM
		The washing of concrete trucks on site is prohibited. Any spilled concrete shall be cleaned up immediately.		Throughout	C CECO	SM	ECO	EA EM PM
		The Contractor must provide DEAT with proof of confirmation of service provision from waste service providers for the removal of wastes.			C CECO	SM	ECO	EA EM PM
		A general site-wide litter clean up will occur at least once a week.		Weekly	C CECO	SM	ECO	EA EM PM
		Waste will be collected from site by a licensed contractor and removed to an appropriate waste disposal facility.		Weekly	C CECO	SM	ECO	EA EM PM

		Wherever possible, materials will be recycled via a "Greens waste site". To this end, containers for glass, paper, metals, plastics, organic waste and hazardous wastes (e.g. oil rags, paint containers, thinners) will be provided in sufficient quantity on the site.		Weekly	C CECO	SM	ECO	EA EM PM
		Waste will be removed during off-peak traffic periods to minimise impacts on local traffic patterns.		Weekly	C CECO	SM	ECO	EA EM PM
		All waste generated during construction and operation of the facility must be removed and disposed of at a waste facility permitted in terms of Section20 of the Environmental Conservation Act, 1989 (Act 73 of 1989).		Weekly	C CECO	SM	ECO	EA EM PM
		Littering by the employees of the Contractor shall not be allowed (TRMSCAAC1 REV 3 section 4.1.2).		Daily	C CECO	SM	ECO	EA EM PM
		All potentially hazardous and non-degradable waste shall be collected and removed to a registered waste site.		Weekly	C CECO	SM	ECO	EA EM PM
Rehabilitation Phase								
1	Refuse and Rubble	Same as construction phase.						

	Removal	
Operational Phase		
1	Refuse and Rubble Removal	Same as construction phase.

6.10 Fire Prevention

Objectives	• No veld fires started by the Contractor's work force. • No claims from Landowners for damages due to veld fires. • No litigation.

No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Pre-Construction Phase								
1	Fire Prevention	The Contractor shall have fire-fighting equipment available on all vehicles working on site, especially during the winter months.		Throughout	C CECO	SM	ECO	EA EM PM
		The Contractor will document a fire reduction management plan. The plan will identify sources of fire hazard, and appropriate management measures to reduce the identified risk. The relevant authority will be notified of such		Monthly	C CECO	SM	ECO	EA EM PM

		potential fire hazards.						
Construction Phase								
1	Fire Prevention	Preferentially no fires will be lit on the site, if however required, fires must be limited to use for cooking and heating use only within a designated area. This area will be a suitable distance from fuel sources. A fire will be constantly monitored while present.		Daily	C CECO	SM	ECO	EA EM PM
		In terms of the Atmospheric Pollution Prevention (APPA), burning is not permitted for waste disposal.		Throughout	C CECO	SM	ECO	EA EM PM
		Suitable precautions will be taken (e.g. suitable fire extinguisher, welding curtains) when working with welding or grinding equipment near potential sources of combustion.		Daily	C CECO	SM	ECO	EA EM PM
		All fire control mechanisms (fire fighting equipment) will be routinely inspected by a qualified investigator for efficacy thereof and be approved by local fire services. Such mechanisms will be present and accessible at all times.		Monthly	C CECO	SM	ECO	EA EM PM
		All staff on site will be made aware of general fire prevention and control methods, and the name of the responsible person to alert to the		Once-off	C CECO	SM	ECO	EA EM PM

		presence of a fire.						
		The Contractor will advise the relevant authority of a fire outside of a demarcated area as soon as it starts and will not wait until he can no longer control it.		When necessary	C CECO	SM	ECO	EA EM PM
Rehabilitation Phase								
1	Fire Prevention	None.						
Operational Phase								
1	Fire Prevention	None.						

6.11 Designated Storage Areas

Objective	To ensure that cognisance is taken of proper storage of dangerous goods and hazardous materials so as to avoid accidents, spillage, and impacts to the environment.							
No.	**Activity**	**Mitigation Measures**	**Duration**	**Frequency**	**Responsibility**	**Accountable**	**Contacted**	**Informed**
Pre-Construction Phase								
1	Workshop, equipment maintenance	Where possible and practical all maintenance of vehicles and equipment shall take place in the workshop area, on a paved or concrete lined		Monthly	C CECO	SM	ECO	EA EM PM

	and storage	surface.						
		All hazardous substances shall be stored in suitable containers and storage areas shall be bunded. This includes all carbon substances like fuel and oil as well as herbicides and battery acid.		Monthly	C CECO	SM	ECO	EA EM PM
		A register shall be kept on all substances and be available for inspection at all times.		Monthly	C CECO	SM	ECO	EA EM PM
Construction Phase								
1	Workshop, equipment maintenance and storage	Servicing of vehicles within Power Station perimeters is strictly prohibited.		Throughout	C CECO	SM	ECO	EA EM PM
		Only emergency repairs shall be allowed on site and a drip tray shall be used to prevent oil spills.		Daily	C CECO	SM	ECO	EA EM PM
		In the event of a breakdown within the substation perimeter, any oil spills shall be cleaned up immediately and appropriate environmental investigations undertaken and recorded.		When necessary	C CECO	SM	ECO	EA EM PM
		The following shall apply:						
		• All contaminated soil shall be removed and be placed in containers. Contaminated soil can be taken to one central point at the Contractors campsite		Monthly	C CECO	SM	ECO	EA EM PM

		where bio-remediation can be done; • Smaller spills can be treated on site; • A specialist Contractor shall be used for the bio-remediation of contaminated soil; • The area around the fuel storage drum at the Contractor's campsite shall also be re-mediated upon completion of the contract; and • All oil spills must be reported to ECO immediately.						
		Under no circumstances shall such waste be buried on site indiscriminately.		Throughout	C CECO	SM	ECO	EA EM PM
		No maintenance or repair of construction vehicles or machinery will occur on site during the construction phase. Maintenance of equipment and vehicles will be preformed off-site at a suitably designed workshop.		Monthly	C CECO	SM	ECO	EA EM PM
		Movement of construction vehicles and machinery must be restricted to areas outside of sensitive areas on site.		Throughout	C CECO	SM	ECO	EA EM PM
		No washing of plant may occur on the site.		Throughout	C CECO	SM	ECO	EA EM PM
		The contractor will ensure that if emergency plant maintenance occurs on site, that there is no contamination of soil or vegetation (e.g. use of		Monthly	C CECO	SM	ECO	EA EM PM

		drip trays).						
		Drip trays will be provided for the stationary plant and for the "parked" plant.		Throughout	C CECO	SM	ECO	EA EM PM
		All vehicles and equipment will be kept in good working order and serviced regularly. Leaking equipment will be repaired immediately or removed from the site.		Daily	C CECO	SM	ECO	EA EM PM
		The relevant contractor must ensure that facilities for the collection of hydraulic and other vehicle oils are provided within the hard park area.		When necessary	C CECO	SM	ECO	EA EM PM
		The repair of construction vehicles must be done on a paved surface to avoid leaking oils sipping into the ground.		When necessary	C CECO	SM	ECO	EA EM PM
2	Materials use, handling and storage	The Contractor will ensure that delivery drivers are informed of all procedures and restrictions required by this document. Such drivers will be supervised during off-loading, by a person knowledgeable of the requirements.		Monthly	C CECO	SM	ECO	EA EM PM
		Materials will be appropriately secured to ensure safe passage between destinations. Loose loads (e.g. sand, stone chip, fine vegetation, refuse,		Throughout	C CECO	SM	ECO	EA EM PM

		paper and cement) will be covered.						
		The Contractor will be responsible for any clean-up resulting from the failure by his employees or suppliers to properly secure transported materials.		When necessary	C CECO	SM	ECO	EA EM PM
		All material lay-down areas and stockpiles will be subject to the Site Manager's approval.		Monthly	C CECO	SM	ECO	EA EM PM
		Imported fill / soil / sand materials will be free of weeds, litter and contaminants.		When necessary	C CECO	SM	ECO	EA EM PM
		Storage areas will be roofed in an impervious material, with a suitable overhang or side cladding. Rainwater run-off will be channelled away from the storage area as required.		Once-off	C CECO	SM	ECO	EA EM PM
		Hydraulic fluids are stored in concrete lined surfaces with bund walls and must be designated in such a manner that any spillages can be contained and reclaimed without any impact on the surrounding environment.		Monthly	C CECO	SM	ECO	EA EM PM
		Hazardous and flammable substances must be stored and used in compliance with applicable regulations and safety instructions.		Monthly	C CECO	SM	ECO	EA EM PM

		During servicing of vehicles or equipment, a suitable drip tray shall be used to prevent spills onto the soil, especially where emergency repairs are effected outside the workshop area.		Monthly	C CECO	SM	ECO	EA EM PM
		Leaking equipment shall be repaired immediately or be removed from site to facilitate repair.		When necessary	C CECO	SM	ECO	EA EM PM
		Areas shall be monitored for spills and any spills shall be contained, cleaned and rehabilitated immediately.		Monthly	C CECO	SM	ECO	EA EM PM
		Any leaking containers shall be repaired or removed from site.		When necessary	C CECO	SM	ECO	EA EM PM
Rehabilitation Phase								
1	Servicing of Vehicles	None.						
Operational Phase								
1	Servicing of Vehicles	None.						

6.12 Tower Positions

Objectives	• Minimise damage to topsoil and environment at tower positions • Successful rehabilitation of all damaged areas • Prevention of erosion and no visible erosion scars three months after completion of the contract

No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Pre-Construction Phase								
1	Tower positioning	Refer to TRMSCAAC1 REV 3 SECTION 4.4.5 for specifications concerning tower sites on slopes.		Once-off	C CECO	SM	ECO	EA EM PM
Construction Phase								
1	Tower Positioning	Disturbance of topsoil on tower sites with severe slopes shall be minimised at all costs.		Throughout	C CECO	SM	ECO	EA EM PM
		At any tower sites where conventional foundations are installed, the Contractor shall remove the topsoil separately and store it for later use during rehabilitation of such tower sites.		Monthly	C CECO	SM	ECO	EA EM PM
		During backfilling operations, the Contractor shall take care not to dump the topsoil in the bottom of the foundation and then put spoil on top of that.		Monthly	C CECO	SM	ECO	EA EM PM

		In accordance with the Conservation of Agricultural Resources Act, No 43 of 1983, slopes in excess of 2% must be contoured and slopes in excess of 12% must be terraced.		When necessary	C CECO	SM	ECO	EA EM PM
		Contour banks shall be spaced according to the slope on tower sites. The type of soil shall also be taken into consideration.		Monthly	C CECO	SM	ECO	EA EM PM
Rehabilitation Phase								
1	Tower Positioning	Re-seeding shall be done on disturbed areas as directed by the Environmental Control Officer.		When necessary	C CECO	SM	ECO	EA EM PM
		Other methods of rehabilitation of tower sites may also be used at the discretion of the Environmental Control Officer, e.g. stone pitching, logging, etc.		When necessary	C CECO	SM	ECO	EA EM PM
		A mixture of seed can be used provided the mixture is carefully selected to ensure the following: • Annual and perennial plants are chosen; • Pioneer species are included;		When necessary	C CECO	SM	ECO	EA EM PM

		• All the plants shall not be edible; • Species chosen will grow in the area without many problems; • Root systems must have a binding effect on the soil; and • The final product should not cause an ecological imbalance in the area.						
		To get the best results in a specific area, it is a good idea to consult with a vegetation specialist or the local extension officer of the Dept of Agriculture. Seed distributors can also give valuable advice as to the mixtures and amount of seed necessary to seed a certain area. Re-seeding, as well as fencing in of badly damaged areas, will always be at the discretion of the Environmental Control Officer, unless specifically requested by a Landowner.		When necessary	C CECO	SM	ECO	EA EM PM
Operational Phase								
1	Tower	None.						

	Positioning	

6.13 Claims from Damages

Objectives	• Minimise complaints from Landowners • Prevent litigation due to outstanding claims by ensuring that claims are settled within one (1) month. • Successful completion of the contract and all Landowners signing release forms within 6 months of completion of the project.

No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Pre-Construction Phase								
1	Claims from Damages	None.						
Construction Phase								
1	Claims from Damages	All damage to Eskom property shall be recorded immediately.		When necessary	C CECO	SM	ECO	EA EM PM
		The Environmental Control Officer should also keep a photographic record of such damage.		When necessary	C CECO	SM	ECO	EA EM PM
		The date, time of damage, type of damage and reason for the damage shall be recorded in full to ensure the responsible party is held liable.		When necessary	C CECO	SM	ECO	EA EM PM

		All claims for damage should be directed to the Environmental Control Officer for appraisal.		When necessary	C CECO	SM	ECO	EA EM PM
		The Contractor shall be held liable for all unnecessary damage to Eskom property.		When necessary	C CECO	SM	ECO	EA EM PM
		A register shall be kept of all complaints from Landowners.		Monthly	C CECO	SM	ECO	EA EM PM
		All claims shall be handled immediately to ensure timeous rectification / payment.		When necessary	C CECO	SM	ECO	EA EM PM
Rehabilitation Phase								
1	Claims from Damages	None.						
Operational Phase								
1	Claims from Damages	None.						

6.14 Erosion, Donga and River Crossings

Objectives	• Minimise erosion damage on donga crossings and embankments. There should be no visible damage caused by construction activities. • Minimise impeding the natural flow of water • Minimise initiation of erosion through donga embankments

No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Pre-Construction Phase								
1	Erosion and donga Crossings	Crossing of dongas and eroded areas shall be thoroughly planned in accordance with TRMSCAAC1 REV 3 Section 4.4.1.		Once-off	C CECO	SM	ECO	EA EM PM
		All structures shall be properly designed and drawings shall be available for reference purposes.		Once-off	C CECO	SM	ECO	EA EM PM
2	River Crossings	Existing drifts and bridges may be used if the Landowner gives his consent. Such structures shall then be thoroughly examined for strength and durability before they are used.		Once-off	C CECO	SM	ECO	EA EM PM
		New drifts and bridges shall only be constructed with the approval of Eskom and the Landowner and at the discretion of the Environmental Control Officer.		Monthly	C CECO	SM	ECO	EA EM PM
		All structures constructed for access purposes shall be properly designed and drawings of such structures shall be available for record purposes.		Once-off	C CECO	SM	ECO	EA EM PM
Construction Phase								
1	Erosion and Donga	Water diversion berms shall be installed at donga crossings to ensure runoff water on the servitude		Monthly	C			

	Crossings	does not run into dongas and cause an erosion hazard.						
		Suitable erosion containment structures shall be constructed at donga crossings where required and viable.		When necessary	C CECO	SM	ECO	EA EM PM
		No unplanned / improperly planned cutting of donga embankments is allowed as this leads to erosion and degradation of the environment.		Throughout	C CECO	SM	ECO	EA EM PM
2	River Crossings	No roads shall be cut through river and stream banks as this may lead to erosion causing siltation of streams and downstream dams.		Throughout	C CECO	SM	ECO	EA EM PM
Rehabilitation Phase								
1	Erosion and Donga Crossings	None.						
Operational Phase								
1	Erosion and Donga Crossings	None.						

6.15 Flora Management (including Vegetation Clearing, General, and Herbicides)

Objective	• Minimise damage to vegetation by only clearing 8m vegetation along the centre of the servitude for access purposes. • Keep servitude as natural looking as possible. • No vegetation interfering with structures and statutory safety requirements upon completion of the contract. • Minimise possibility of erosion due to removal of vegetation by not de-stumping vegetation on river and stream embankments. • Minimise removal of plant material on river and stream embankments. • Eradication of alien invader and densifier species that cause a fire hazard. • No visible herbicide damage to the vegetation along the servitude one year after completion of the contract due to incorrect herbicide use. • No litigation due to unauthorised removal of vegetation.

No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Pre-Construction Phase								
1	Vegetation Clearing	Vegetation clearing shall be done in accordance with ESKASABG3 REV 0 (Standard for bush clearance and maintenance within overhead power line servitudes) and the Vegetation Management Guideline.		Monthly	C CECO	SM	ECO	EA EM PM
		The removal of all economically valuable trees or vegetation shall be negotiated with the Landowner before such vegetation is removed.		When necessary	C CECO	SM	ECO	EA EM PM
		The Contractor will remove plants containing any diseases and /or pests fro the site.		Weekly	C CECO	SM	ECO	EA EM PM

Construction Phase								
1	Vegetation Clearing	Only an 8m strip may be cleared flush with the ground to allow vehicular passage during construction.		Throughout	C CECO	SM	ECO	EA EM PM
		The removal of indigenous plant material from the site or surrounding and adjacent land will not be allowed.		Throughout	C CECO	SM	ECO	EA EM PM
		No scalping shall be allowed on any part of the servitude road unless absolutely necessary.		Throughout	C CECO	SM	ECO	EA EM PM
		All trees and vegetation cleared from the site shall be cut into manageable lengths and neatly stacked at regular intervals along the line.		Monthly	C CECO	SM	ECO	EA EM PM
		No vegetation shall be pushed into heaps or left lying all over the servitude.		Throughout	C CECO	SM	ECO	EA EM PM
		Vegetation clearing on tower sites must be kept to a minimum.		When necessary	C CECO	SM	ECO	EA EM PM
		Big trees with large root systems shall be cut manually and removed, as the use of a bulldozer will cause major damage to the soil when the root		When necessary	C CECO	SM	ECO	EA EM PM

		systems are removed.						
		Stumps shall be treated with herbicide.		Monthly	C CECO	SM	ECO	EA EM PM
		Smaller vegetation can be flattened with a machine, but the blade should be kept above ground level to prevent scalping.		When necessary	C CECO	SM	ECO	EA EM PM
		Any vegetation cleared on a tower site shall be removed or flattened and not be pushed to form an embankment around the tower.		When necessary	C CECO	SM	ECO	EA EM PM
		No vegetation clearing in the form of de-stumping, scalping or uprooting shall be allowed on river and stream banks.		Throughout	C CECO	SM	ECO	EA EM PM
		Vegetation shall only be cut to allow for the passage of the pilot-cables and headboard.		Monthly	C CECO	SM	ECO	EA EM PM
		No vegetation clearing shall be allowed across ravines and gullies, as this vegetation will very rarely interfere with the clearance to the strung conductor.		Throughout	C CECO	SM	ECO	EA EM PM

		Trees and vegetation not interfering with the statutory clearance to the conductors can be left under the line.		Throughout	C CECO	SM	ECO	EA EM PM
		Dense vegetation under the line which could cause a fire hazard, particularly in the middle third of the span in the vicinity of the lowest point of the conductors, will be considered as a separate case.		When necessary	C CECO	SM	ECO	EA EM PM
		With permission of the landowner, the total servitude under the line and up to 5m outside the outer phases can be cleared.		When necessary	C CECO	SM	ECO	EA EM PM
		Protected or endangered species of plants shall not be removed unless they are interfering with a structure.		Throughout	C CECO	SM	ECO	EA EM PM
		Where such species have to be removed due to interference with a structure, the necessary permission and permits shall be obtained from Provincial Nature Conservation.		When necessary	C CECO	SM	ECO	EA EM PM

		All protected species not to be removed must be clearly marked and such areas fenced off if required.		When necessary	C CECO	SM	ECO	EA EM PM
		The use of herbicides shall only be allowed after a proper investigation into the necessity, the type to be used, the long-term effects and the effectiveness of the agent. Eskom's approval for the use of herbicides is mandatory (Contact Dr. Eugene van Rensburg—Vegetation Management).		When necessary	C CECO	SM	ECO	EA EM PM
		Application shall be under the direct supervision of a qualified technician. All surplus herbicide shall be disposed of in accordance with the supplier's specifications.		Monthly	C CECO	SM	ECO	EA EM PM
		Upon completion of the stringing operations and before handover, the servitude must be inspected and all vegetation interfering with the safe operation of the line shall be removed / cut down.		Monthly	C CECO	SM	ECO	EA EM PM
		All alien vegetation in the total servitude and densifiers creating a fire hazard shall be cleared		Weekly	C CECO	SM	ECO	EA EM PM

		and treated with herbicides. (Refer to the Vegetation Management Guideline attached). • The application shall be according to set specifications and under supervision of a qualified technician. • The possibility of leaching into the surrounding environment shall be properly investigated and only environmentally friendly herbicides shall be used.						
		It is recommended that a contractor for vegetation clearing should comply with the following parameters: • The contractor must have the necessary knowledge to be able to identify protected species as well as species not to be interfering with; • The operation of the line due to their height and growth rate;		Throughout	C CECO	SM	ECO	EA EM PM

		• The contractor must also be able to identify declared weeds and alien species that can be totally eradicated; and • The contractor must be in possession of a valid herbicide applicators license.						
		The removal of protected vegetation and medicinal plants during construction must be done in consultation with the provincial environmental authorities, and the appropriate post-construction rehabilitation measures must be implemented in cooperation with the provincial environmental authorities.		When necessary	C CECO	SM	ECO	EA EM PM
2	Harvesting of Medicinal Plants	The removal of protected vegetation and medicinal plants during construction must be done in consultation with the provincial environmental authorities, and the appropriate post-construction rehabilitation measures must be implemented in cooperation with the provincial environmental authorities.		When necessary	C CECO	SM	ECO	EA EM PM
		Should Medicinal Plants be found on site, these plants will be demarcated and cordoned off.		When necessary	C CECO	SM	ECO	EA EM PM

		Once demarcated, they will be removed and translocated to an established nursery. The plants shall be removed by a certified Nursery with experience in the handling and translocation of plants. The South African National Biodiversity Institute (SANBI) shall be contacted for assistance should a certified nursery not be available.		When necessary				
3	Protection of Indigenous Vegetation	Removal of indigenous plant material from the site or surrounding and adjacent land will not be allowed;		Throughout	C CECO	SM	ECO	EA EM PM
		Only indigenous vegetation is to be used in any landscaping which may be undertaken;		Throughout	C CECO	SM	ECO	EA EM PM
4	Search and Rescue of Endangered Plant Species	Should Protected or Endangered Plant Species be found on site they will be demarcated and cordoned off. An Ecological Management Plan will be compiled and submitted to DEAT for approval. The Ecological Management Plan will include the following: • Ensure the persistence of the plant species; • Include a monitoring programme that monitors the size, stage structure and vigour of the plant species population and threats to the population;		When necessary	C CECO	SM	ECO	EA EM PM

		• Facilitate/augment natural ecological processes such as fire and herbivory; • Provide for the habitat and life history needs of important pollinators; • Minimise artificial edge effects (e.g. water runoff from developed areas and application of chemicals; • Include an ongoing monitoring and eradication programme for non-indigenous/alien invasive species; • Result in a Report to be submitted to the relevant authority (GDACE, DEAT, etc) • Where feasible, appropriate genetic material such as seeds or propagules of the plant species shall be collected and stored at a licensed facility.						
		• In situ conservation of Protected and Endangered Plant Species is preferable to ex situ conservation. Thus, should the plant species not "interfere" with the construction of a structure, the area surrounding the plant species shall be declared a "no-go" area as outlined in the Ecological Management Plan; and		Throughout	C CECO	SM	ECO	EA EM PM

		• The area surrounding the plant species shall be declared a "No-go" area and a buffer zone will be applied as outlined in the Ecological Management Plan;						
5	Alien Plant Control and Monitoring	The Developer will be responsible for controlling all alien invasive species, as per the requirements of the Conservation of Agricultural Resources Act (CARA), during the contract and vegetation establishment period;		Throughout	C CECO	SM	ECO	EA EM PM
		All exotic trees will be identified and marked;		When necessary	C CECO	SM	ECO	EA EM PM
		Alien invasive plant material will be preferentially removed in entirety through mechanical means (e.g. chainsaw, bulldozer, hand-pulling of smaller specimens);		When necessary	C CECO	SM	ECO	EA EM PM
		The exotic trees must be cut down leaving the stumps behind to ensure that soil erosion is prevented; The trees can be chipped on site and the chips seeded with indigenous vegetation and spread over the site to allow for re-growth and to reduce erosion potential;		Throughout	C CECO	SM	ECO	EA EM PM
		Immediately after being cut, a herbicide solution must be applied to the exotic trees to ensure no further growth. The person applying the herbicide		Throughout	C CECO	SM	ECO	EA EM PM

		must have read and understood the instructions. Care must be taken that there is no spillage of solution in the wetland and that the correct protective equipment must be used;						
		If plants are not removed in entirety but cut-back and systematically treated with approved herbicides, then remaining plant will be monitored for re-growth / re-establishment;		Monthly	C CECO	SM	ECO	EA EM PM
		Herbicides used must be approved by authorities and as per the supplier's specifications;		Once-off	C CECO	SM	ECO	EA EM PM
		Alien invasive plant material will not be stockpiled. All such material removed will be removed from the site and dumped at an approved disposal site;		Throughout	C CECO	SM	ECO	EA EM PM
		If during the establishment period any noxious or excessive weed growth occurs, such vegetation will be removed; and		When necessary	C CECO	SM	ECO	EA EM PM
		It is the developer's responsibility to implement a monitoring programme that will be instituted to ensure that re-growth of alien invasive plants species does not occur, or that such re-growth is controlled.		Monthly	C CECO	SM	ECO	EA EM PM
Rehabilitation Phase								
1	Traffic on rehabilitated	If disturbed areas are left to rehabilitate naturally, they must be frequently monitored and		Monthly	C CECO	SM	ECO	EA EM PM

	areas.	interventions put in place immediately should it become necessary. Special attention must be given to the potential for soil erosion and the associated environmental degradation. It is also essential to undertake alien vegetation control and management.						
		No construction equipment, vehicles or unauthorised personnel will be allowed onto areas that have been re-vegetated		Throughout	C CECO	SM	ECO	EA EM PM
		Only persons / equipment required for maintenance thereof will be allowed to operate on such areas.		Throughout	C CECO	SM	ECO	EA EM PM
2	Plant Material	All plant material used on site will be obtained from an approved nursery;		Throughout	C CECO	SM	ECO	EA EM PM
		The Contractor will remove plants containing any diseases and/or pests from the site;		Throughout	C CECO	SM	ECO	EA EM PM
		Propagation of suitable indigenous vegetation that is quick to establish such as grasses, should be encouraged in areas where vegetation has been removed		Throughout	C CECO	SM	ECO	EA EM PM
		On planting, there will be sufficient topsoil around each plant to prevent desiccation of the root system. Where plants are stored on site prior to planting they will be maintained to ensure that		Throughout	C CECO	SM	ECO	EA EM PM

		the root systems remain moist; and						
		Each plant brought onto site will be handled and packed in an approved manner for that species or variety, and that all necessary precautions are taken to ensure that the plants arrive on the site in a proper condition for successful growth (e.g. good plant specimens chosen, disease and/or pest free, potting material weed free, plants covered during transportation, containers in good condition);		Throughout	C CECO	SM	ECO	EA EM PM
3	Reseeding of Disturbed Areas	All reseeding activities will be undertaken at the end of the dry season (middle to end September) to ensure optimal conditions for germination and rapid vegetation establishment;		Wet Season	C CECO	SM	ECO	EA EM PM
		The seed mix will be approved by the ECO prior to seeding;		Wet Season once-off	C CECO	SM	ECO	EA EM PM
		Seeds should be covered by use of an agricultural roller or similar mechanism;		Throughout	C CECO	SM	ECO	EA EM PM
		Inspect rehabilitated area at three monthly intervals during the first and second growing season to determine the efficacy of rehabilitation measures; and			C CECO	SM	ECO	EA EM PM
		Take appropriate remedial action where vegetation establishment has not been successful or erosion is evident within the first two growing			C CECO	SM	ECO	EA EM PM

		seasons.						
4	Alien Plant Control and Monitoring	Alien plant control will be conducted as described in Section 5.14, for a period of two years after the rehabilitation phase is completed.			C CECO	SM	ECO	EA EM PM
5	Soil and Land Capability	All excess building material and rubble must be collected and disposed of at a suitably registered landfill site.			C CECO	SM	ECO	EA EM PM
		Soils must be ripped to refusal or a minimum of 300mm prior to seeding.			C CECO	SM	ECO	EA EM PM
		All areas must be profiled to tie in with adjacent terrain. Where necessary suitable soil must be imported obtain a suitable profile.			C CECO	SM	ECO	EA EM PM
		Suitable erosion control measures must be installed in areas where erosion may occur;			C CECO	SM	ECO	EA EM PM
		Apply a suitable mixture of N:P:K fertiliser prior to seeding;			C CECO	SM	ECO	EA EM PM
		Harrow the disturbed areas after spreading the topsoil and fertilizer uniformly;			C CECO	SM	ECO	EA EM PM
		Rehabilitated and profiled areas must be inspected for erosion every three months for the first two years. Additional measures must be implemented to remediate erosion where it is observed.			C CECO	SM	ECO	EA EM PM

Operational Phase								
1	Vegetation Clearing	None.	-	-	-			

6.16 Fauna Management

Objectives	• Minimise disruption of farming activities (No stock losses where construction is underway); • Minimise disturbance of animals; • Minimise interruption of breeding patterns of birds; and • No litigation concerning stock losses and animal deaths.							
No.	**Activity**	**Mitigation Measures**	**Duration**	**Frequency**	**Responsibility**	**Accountable**	**Contacted**	**Informed**
Pre-Construction Phase								
1	Planning	Construction planning must be undertaken prior to construction to ensure that it does not conflict with breeding seasons.	One week	Once off	C CECO	SM	ECO	EA EM PM
		The breeding sites of raptors and other wild bird species shall be taken into consideration during the planning of the construction programme.			C CECO	SM	ECO	EA EM PM
		There are many instances where protected and endangered species of birds are nesting on our transmission towers without causing any problems to the flow of electricity or network			C CECO	SM	ECO	EA EM PM

		stability. These birds are highly territorial and some have been using the same nests for many years, I.e. Black Eagle (Witkruisarend). They are guarded jealously by the landowners and are monitored by many groups involved with ensuring their continued existence, including Nature Conservation officials at National and Provincial level. It is therefore imperative that the breeding sites of these birds are kept intact and that the breeding pairs are not disturbed especially where there are young nestlings. The Contractor shall take all the necessary precautions and it is recommended that sites on parallel existing lines be noted, i.e. tower numbers. This information must then be given to the avian specialist via the Environmental Advisor so that the necessary action can be taken timeously.						
2	Fencing	Ensure that suitable fencing is erected prior to the commencement of construction to ensure that live stock does not wonder into dangerous areas.	Throughout the project.	Weekly inspections.	C CECO	SM	ECO	EA EM PM
Construction Phase								

1	Construction	The Contractor's workforce will have to be very careful not to disturb the animals as this may lead to fatalities which will give rise to claims from the Landowners.		Throughout	C CECO	SM	ECO	EA EM PM
		The Contractor shall under no circumstances interfere with livestock without the Landowner being present. This includes the moving of livestock where they interfere with construction activities.		Throughout	C CECO	SM	ECO	EA EM PM
		Should the Contractors workforce obtain any livestock for eating purposes, they must be in possession of a written note from the Landowner.		When necessary	C CECO	SM	ECO	EA EM PM
		Should any new sites or nests be found, during the construction process, that was not known or have been noted before, each site shall be assessed for merit and the necessary precautions be taken to ensure the least disturbance.		When necessary	C CECO	SM	ECO	EA EM PM
Rehabilitation Phase								
1	Construction	Same as construction phase.						
Operational Phase								
1	Construction	Same as construction phase.						

6.17 Interaction with adjacent landowners

Objectives	• Maintain good relations with Landowners; • No delays in the project due to Landowner interference; and • Landowner signs final release form.							
No.	**Activity**	**Mitigation Measures**	**Duration**	**Frequency**	**Responsibility**	**Accountable**	**Contacted**	**Informed**
Pre-Construction Phase								
1	Interaction with Land Owners	All negotiations for any reason shall be between Eskom, the landowners and the Contractor.		Throughout	C CECO	SM	ECO	EA EM PM
		No verbal agreements shall be made. All agreements shall be recorded properly and all parties shall co-sign the documentation. It is proposed that a photographic record of access roads be kept.		When necessary	C CECO	SM	ECO	EA EM PM
		It is required that the Contractor will supply one person to be the liaison officer (CECO) for the entire contract, and that this person shall be available to investigate all problems arising on the work sites concerning adjacent landowners (TRMSCAAC1 REV 3).	Throughout project	Ongoing.	C CECO	SM	ECO	EA EM PM
Construction Phase								
1	Interaction with Land	The construction process will use the services of the Power Station Environmental Monitoring /		Monthly				

	Owners	Management Committee (EMC) for communication with the land owners.						
		Any claims instituted by the Landowners shall be investigated and treated promptly. Unnecessary delays should be avoided at all costs.		When necessary	C CECO	SM	ECO	EA EM PM
		Landowners shall always be kept informed about any changes to the construction programme should they be involved. If Eskom's Environmental Control Officer is not on site the Contractor's Environmental Control Officer should keep the Landowners informed.		Monthly	C CECO	SM	ECO	EA EM PM
		The contact numbers of the Contractor's ECO officer and the Eskom ECO shall be made available to the Landowners.		Once-off	C CECO	SM	ECO	EA EM PM
		All contact with the Landowners shall be courteous at all times.		Throughout	C CECO	SM	ECO	EA EM PM
		The rights of the Landowners shall be respected at all times and all staff shall be sensitised to the effect that we are working on private property.		Throughout	C CECO	SM	ECO	EA EM PM
Rehabilitation Phase								
1	Interaction with Land	Same as for construction phase above.						

	Owners							
Operational Phase								
1	Interaction with Land Owners	The rights of the Landowners shall be respected at all times and all staff shall be sensitised to the effect that we are working on private property.		Throughout	C CECO	SM	ECO	EA EM PM

6.18 Noise / Working Hours

Objective	• To ensure that noise is managed in such a manner that no complaints are received.							
No.	**Activity**	**Mitigation Measures**	**Duration**	**Frequency**	**Responsibility**	**Accountable**	**Contacted**	**Informed**
Pre-Construction Phase								
None								
Construction Phase								
1	Noise	In order to prevent noise impacts resulting from construction activities, working hours are to be limited to weekdays between 7h00 to 17h00.		Throughout	C CECO	SM	ECO	EA EM PM
		If certain construction requires work outside of these hours, all adjacent landowners have to be informed prior to any construction outside of the specified hours commencing.		Once – off, if necessary	C CECO	SM	ECO	EA EM PM

		If there are complaints about low frequency noise after the refurbishment, Eskom would have to get a noise expert to do measurements and recommend mitigation.		If necessary				
Rehabilitation Phase								
1	Noise	Same as Construction Phase.						
Operational Phase								
1	Noise	Same as Construction Phase						

6.19 Infrastructure

Objectives	• Ensure that existing infrastructure is taken into account during planning and project execution to eliminate impacts to existing infrastructure; and • To avoid claims and litigation.

No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Pre-Construction Phase								
1	Planning	Demarcate all existing infrastructure on site layout plans. Document condition of existing infrastructure prior to construction.	One day	Monthly Inspections	C CECO	SM	ECO	EA EM PM
Construction Phase								

1	Construction activities	All existing private access roads used for construction purposes, shall be maintained at all times to ensure that the local people have free access to and from their properties.		Throughout	C CECO	SM	ECO	EA EM PM
		Speed limits shall be enforced in such areas and all drivers shall be sensitised to this effect.		Throughout	C CECO	SM	ECO	EA EM PM
Rehabilitation Phase								
1	Re-instate all roads and infrastructure.	Upon completion of the project all roads and infrastructure shall be repaired to their original state.		Once-off	C CECO	SM	ECO	EA EM PM
Operational Phase								
1	Re-instate all roads and infrastructure.	Same as rehabilitation phase.						

6.20 Archaeology

Objective	• Protection of archaeological sites and land considered to be of cultural value; • Protection of known sites against vandalism, destruction and theft; and • The preservation and appropriate management of new archaeological finds should these be discovered during construction.							
No.	**Activity**	**Mitigation Measures**	**Duration**	**Frequency**	**Responsibility**	**Accountable**	**Contacted**	**Informed**
Pre-Construction Phase								

1	Planning	Ensure all known sites of cultural, archaeological, and historical significance are demarcated on the site layout plan, and marked as no-go areas.	Throughout Project	Weekly Inspection	C CECO	SM	ECO	EA EM PM
Construction Phase								
1	Emergency Response	Should any heritage resources be exposed during excavation for the purpose of construction, construction in the vicinity of the finding must be stopped.		Throughout	C CECO	SM	ECO	EA EM PM
		Should any heritage resources be exposed during excavation or be found on site, a registered heritage specialist must be called to site for inspection.		Throughout	C CECO	SM	ECO	EA EM PM
		Should any heritage resources be exposed during excavation or be found on site, the relevant heritage resource agency must be informed about the finding;		Throughout	C CECO	SM	ECO	EA EM PM
		Under no circumstances may any heritage material be destroyed or removed form site;		Throughout	C CECO	SM	ECO	EA EM PM
		Should remains and/or artefacts be discovered on the site during earthworks, all work will cease in the area affected and the Contractor will immediately inform the Construction Manager.		When necessary	C CECO	SM	ECO	EA EM PM
		Should any remains be found on site that is potentially human remains, the South African		When necessary	C CECO	SM	ECO	EA EM PM

		Police Service should also be contacted.						
Rehabilitation Phase								
		Same as construction phase.						
Operational Phase								
		Same as construction phase.						

6.21 Residential Property

Objectives	
	• Control actions and activities in close proximity to inhabited areas; • No complaints from Landowners; • No damage to private property.

No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Pre-Construction Phase								
1	Planning	All private residences will be demarcated on a site layout plan prior to construction phase commencing.	One day	Weekly Inspections	C CECO	SM	ECO	EA EM PM
Construction Phase								
1	Construction execution	The Contractor shall under no circumstances interfere with the property of adjacent landowners.	Throughout project	Weekly Inspections	C CECO	SM	ECO	EA EM PM

		If water is required, the Contractor shall negotiate with the relevant Landowner and a written agreement shall be drawn up (TRMSCAAC1 REV 3 section 4.8).	Throughout Project	Weekly Inspections	C CECO	SM	ECO	EA EM PM
Rehabilitation Phase								
1	Rehabilitation execution	Same as construction phase.						
Operational Phase								
1	Maintenance of the power line	Same as construction phase.						

7 GENERAL REQUIREMENTS DURING CONSTRUCTION

- Proper and continuous liaison between Eskom, the contractor and Landowners to ensure everyone is informed at all times.

- A physical access plan shall be compiled and the contractor shall adhere to this plan at all times. Proper planning when the physical access plan is drawn up by the Environmental Control Officer in conjunction with the Contractor shall be necessary to ensure access to all construction areas within the substation parameter.

- The adjacent landowners shall be informed of the starting date of construction as well as the phases in which the construction shall take place.

- The Contractor must adhere to all conditions of contract, including the Environmental Management Plan.

- Proper planning of the construction process to allow for disruptions due to rain and very wet conditions.

- Where existing private roads are in a bad state of repair, such roads' condition shall be documented before they are used for construction purposes. If necessary, some repairs should be done to prevent damage to equipment and plant.

- All manmade structures shall be protected against damage at all times and any damage shall be rectified immediately.

- Proper site management and regular monitoring of site works.

- Proper documentation and record keeping of all complaints and actions taken.

- Regular site inspections and good control over the construction process throughout the construction period.

- Appointment of an Environmental Control Officer on behalf of the Contractor to implement this EMP as well as deal with all Landowner related matters.

- Environmental Audits to be carried out during and upon completion of construction (at least three for the project).

- The Contractor shall not be released from site until all Landowners have signed off the release documentation to the satisfaction of the Eskom Environmental Control Officer.

8 SCHEDULING OF MANAGEMENT MEASURES

The construction programme, showing the upfront management measures, and regular audit schedule is attached in Appendix ??. It should be noted that the majority of the management measures are incident and control based. Therefore they will not occur in a management schedule but will rather occur in day to day operations. Where such measures occur these will be inspected during the audit activities provided for in the schedule.

9 SITE DOCUMENTATION / MONITORING / REPORTING

The standard Eskom site documentation shall be used to keep records on site, in addition all non-compliances to the environmental authorisation will be reported to the Director: Environmental Impact Evaluation within 48 hours. All documents shall be kept on site and be available for monitoring and auditing purposes. Site inspections by an Environmental Audit Team may require access to this documentation for auditing purposes. The documentation shall be signed by all parties to ensure that such documents are legitimate. Regular monitoring of all site works by the Environmental Control Officer is imperative to ensure that all problems encountered are solved punctually and amicably. When the Environmental Control Officer is not available, the Contract Manager/Site Supervisor shall keep abreast of all works to ensure no problems arise. The following checklist shall be used as an environmental performance monitoring tool.

Person responsible for this deviation is:
Name:
Designation:

Reporting of environmental performance, problems and priorities are as follows:

7.3 Environmental monitoring of the deviation is according to the following schedule:

The following negative environmental impacts have been identified at the site:

Environmental Problem	**Location**

In order to solve (mitigate) the above identified negative environmental impacts, the following plan of action is to be implemented:

Problem	Solution	Date to be Completed

Monitoring (follow-up) plan of implemented remedial action: **Person responsible for environmental monitoring (follow-up) is:**
Name:
Designation:
Substation Name:
Monitoring Date:

Problem	**Solution as implemented**	**Has the solution worked, if not, what actions are still to be taken**

10 ENVIRONMENTAL CONTACT PERSONS

- Vuledzani Thanyani (Land and Rights: Senior Environmental Advisor)

  Tel: 011 800 5601

- Joyce Mashiteng (Land and Rights: EIA Manager)

  Tel: 011 800 4623

- Virginia Teffo

  Tel: 0118003120

11 EMERGENCY NUMBERS

- Eskom Control 0800 037566
- Police 10111

12 OIL SPILL CONTACT NUMBERS

- Drizit

  Cell: 082 455 7832

- Pineland Environmental Technology

  Cell: 082 464 1074

Appendix A

Environmental Authorisation

Appendix B

ESKOM Pro Forma

PRO FORMA TO BE SIGNED BY THE CONTRACTOR AND ESKOM PROJECT MANAGER AT CONTRACT AWARD.

CONTRACT NAME: _____

CONTRACT NUMBER: _____

ENVIRONMENTAL COMPLIANCE

I _____ ON BEHALF OF _____(C)

I _____ ON BEHALF OF ESKOM

DECLARE AS FOLLOWS:

1. I AM AWARE THAT CONSTRUCTION, REFURBISHMENT OR UPGRADING ACTIVITIES CAN HAVE A MAJOR IMPACT ON THE ENVIRONMENT.
2. I UNDERTAKE TO ADHERE TO THE REQUIREMENTS OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND THE ENVIRONMENTAL AUTHORISATION FROM DEAT.
3. I PLEDGE TO INFORM ALL SITE STAFF OF THEIR INVOLVEMENT IN MANAGING ENVIRONMENTAL IMPACTS ON SITE.
4. I COMMIT TO IMPLEMENTING ENVIRONMENTAL BEST PRACTISE ON SITE AT ALL TIMES DURING THE CONTRACT.

SIGNED: _____ DATE: _____

CONTRACTOR

SIGNED: _____ DATE: _____

ESKOM

Questionnaire to be completed during tender stage by the contractor for evaluation purposes of the tender for line construction:

PLEASE TICK APPROPRIATE BOX (All yes answers to be accompanied by proof)	YES	NO
ENVIRONMENTAL MANAGEMENT SYSTEM - GENERAL		
1-Is your company ISO 14001 certified?		
2-Is your company ISO 14001 compliant?		
3-Does your company have an Environmental Management System in place?		
4-Does your company have an Environmental Policy?		
5-Does your company have an Environmental Statement?		
6-Is your company in the process of implementing any of the above?		
7-Will you be using sub-contractors during the project?		
8-Does any of your proposed sub-contractors comply with 1-6 above?		
ENVIRONMENTAL MANAGEMENT PROGRAMME - GENERAL		
1-Do you understand the contents and context of this EMP attached to the tender document?		
2-Do you agree to implement the requirements of the EMP on site?		
3-Did you allow for the appointment of a specific person to act as the dedicated Contractor Environmental Control Officer (CECO) on site for the duration of the contract? (As per responsibility matrix on page 5 of the EMP)		
4-Is your CECO qualified to implement the EMP conditions? Please attach CV.		
5-Have you allowed sufficient funds for implementing the requirements of the EMP?		

(Environmental management requirements)		
ENVIRONMENTAL MANAGEMENT PROGRAMME - SPECIFIC		
1-Did you supply a method statement for water supply?		
2-Did you supply a method statement for solid waste management?		
3-Did allow for camp wastewater management?		
4-Did you allow for camp and site ablution management?		
5-Did allow for hazardous (oil, fuel, herbicides, etc) substance management?		
6-Did you allow for fire management on site and in the camp?		
7-Did you allow for waste concrete management?		
8-Did your tender allow for the installation of sealed and bunded fuel storage areas?		
9-Did you allow for a contained workshop area for servicing of vehicles?		
10-Did you allow for signage to mark access roads to the line?		
11-Did you allow for emergency spill kits to address possible spills of fuel and oil to prevent pollution?		
12-Does the vegetation-clearing contractor comply with section 4.7 of the EMP?		
13-Did you allow for suitable means and materials to safeguard excavations?		

Appendix C

Locality Map

Appendix D

Profiles

Appendix E

Eskom Policies

Appendix F

Project Schedule