Final Environmental Management Programme

for

THE DWAALBOOM 132KV SWITCHING STATION AND ASSOCIATED SECONDARY INFRASTRUCTURE

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1. INTRODUCTION

Nemai Consulting was appointed by Eskom Holdings Limited to apply for environmental approval for a proposed switching station, its terminal pylons and associated secondary infrastructure. This document serves as the Environmental Impact Assessment (EIA) Report for the aforementioned project. For the purposes of this report the term “switching station” will include the terminal pylons and associated secondary infrastructure, unless otherwise stated.

The purpose of the proposed switching stations is to ensure that the Dwaalboom PPC plant receives a constant supply of electricity during normal and 132kV line outages.

The existing electricity network at Spitskop cannot supply 20MVA to Dwaalboom PPC during contingency conditions as the spare capacity of the 132kV supply-line is almost depleted. The construction of the switching station would ensure that the Dwaalboom PPC plant has sufficient supply for a 20MVA load irrespective of the loss of any 132kV line supply to the existing Dwaalboom substation by introducing parallel 132kV line feeds.

The proposed Dwaalboom switching station would need to be close to both the Dwaalboom Gaborone South 1 transmission route and the Segoditshane Spitskop 1 transmission route. Although Dwaalboom PPC is located within the Limpopo Province, the switching station would be located close to the Limpopo Province border, within the North West Province, as this is where the two transmission lines (the Dwaalboom Gaborone South 1 and the Segoditshane Spitskop 1) are closest to each other.

2. OBJECTIVES OF THE EMPR

This Environmental Management Plan provides the management actions required to reduce environmental impacts generated during the pre-construction, construction, operational and decommissioning activities for this proposed project, as well as gives recommendations for the rehabilitation of impacted areas. This report must be read in conjunction with the Scoping and Environmental Impact Assessment Reports compiled for this PROJECT.

The primary objectives of the EMPR are to:

- Describe actions that when implemented will achieve mitigation of environmental impacts, or result in improved management of activities thereby reducing the probability of impacts occurring;

- Define organisational and administrative arrangements for environmental management and monitoring of the work contract, including defining the responsibilities of staff and co-ordination, liaison and reporting procedures;
- Ensure that discussions are held with site supervision staff, regarding pro-active environmental management, such that potential problems can be identified and mitigation measures adopted prior to rehabilitation work being carried out; and
- Define procedures for environmental control, in the event of pollution (spillage) or similar events requiring action.

3. ENVIRONMENTAL ASPECTS AND IMPACTS

Environmental aspects could be defined as “those components of the construction company’s activities and products that are likely to interact with the environment”. An environmental impact could be defined as “any change to the environment resulting from an environmental aspect”.

The construction contractor1 shall plan activities in such a way that impacts are prevented. In the event that prevention is not practical, or is not achieved because of misapplication, the contractor shall apply approved measures that will limit and contain the magnitude, duration and intensity of the impact as soon as practical. The contractor shall demonstrate that he is capable of repairing and reinstating the damaged environment. General good construction practice will play an important role in avoiding the occurrence of an impact.

4. LEGAL REQUIREMENTS

Construction shall be undertaken according to recognised best industry practices and will include measures, as are recommended within this EMPR. This EMPR shall form part of the contract documents, and informs the contractor about his duties in the fulfilment of the project objectives, with particular reference to the prevention and mitigation of environmental impacts caused by construction activities associated with the project. The Contractor shall note that obligations imposed by the EMPR are legally binding in terms of environmental statutory legislation.

5. LEGAL AGREEMENTS

The developer has to supply the Department of Environmental Affairs (DEA) with the following legal agreements and information before construction commences:

[1] It is recognised that the land owner is the responsible entity regarding all environmental impacts. The land owner may delegate responsibility during the construction phase to one or many sub contractors as and when required. In such an instance the cost for reparation of damages caused by environmental impacts will be recovered from the responsible contractor.

- An agreement stating that the developer knows and understands the contents of the EMPR and that he / she is able and shall comply with all legislation pertaining to the nature of the work to be done and all things incidental thereto;
- The developer must agree to provide DEA with the name and contact details of the person who will be responsible for ensuring and monitoring of compliance to the EMPR, before construction commences;
- The developer will provide DEA with details on the construction time frames including a detailed description of the phasing of the project;

6. 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;
- 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.

7. ENVIRONMENTAL ASSESSMENT PRACTITIONER

Nemai Consulting is an independent, specialist environmental, social development and Occupational Health and Safety (OHS) consultancy, which was founded in December 1999 by Ms D Naidoo. The company is 100% black female owned. The company is considered an emerging company, and it is directed by a team of experienced and capable environmental engineers, scientists, sociologists, psychologists, economists and analysts. These well-experienced professionals have worked both locally and internationally in their respective fields. The company combines its academic and professional expertise with excellent project management skills to ensure that the host of environmental, OHS and social challenges in both the private and public sectors are adequately addressed. The company has offices in Randburg (Gauteng), Rustenburg (North West Province), Durban (KwaZulu-Natal) and Empangeni (KwaZulu-Natal).

7.1. Selected Examples of Completed Projects

- Blanket environmental consultant to Johannesburg Water on all EIA applications for the 2003/2004 and 2004/2005 financial years;
- Advisor to Johannesburg Water on all EIA applications on water and sanitation projects for 2005/2006 financial year;
- Chemical processing plants at Sasol;
- Randfontein to Rustenburg water pipeline;
- Filling stations and tank installations;
- Northern Works Cemetery;
- Housing development in the Northern Cape;
- Bushkoppies Waste Water Treatment Plant;
- 1-Octene 3 Plant;
- Re-instatement of North Riding Dyke;
- Kwa Themba Landfill Closure;
- Mooi-Mngeni Transfer scheme fish-barrier EIA;
- Low cost housing development in Tshwane, including Shoshanguve, Olievenhoutbosch, Mamelodi and Mahube Valley; and
- Low cost housing development in Metsweding, including Ekangala, Kekana Gardens and Rethabiseng.

8. PROJECT ACTIVITIES

Eskom Holdings SOC Limited appointed Nemai Consulting to undertake the Scoping/EIA environmental process for the proposed construction of a switching station and its associated structures in the North West Province, just south of the Limpopo Province border.

The existing electricity network at Spitskop cannot supply 20MVA to Dwaalboom PPC during contingency conditions as the spare capacity of the 132kV supply-line is almost depleted. The construction of the switching station would ensure that the Dwaalboom PPC plant has sufficient supply for a 20MVA load irrespective of the loss of any 132kV line supply to the existing Dwaalboom substation by introducing parallel 132kV line feeds.

The purpose of the proposed switching stations is to ensure that the Dwaalboom PPC plant receives a constant supply of electricity during normal and 132kV line outages.

The switching station will consist of several structures, these include:

- The switching station;
- Terminal pylons – four pylons, known as terminal pylons would be required. Two pylons to supply power to the Spitskop – Segotishane 132 kV line and two pylons to take electricity out of the switching station and connect to the PPC-Derdepoort line;
- The “Hybrid” type substation layout is planned to accommodate a 132 kV Bus-bar 1 & 2,
- Φ200 x 6 WT Al Tubular design with Double bus-bar selection and By-pass facility for the feeder bays.
- 1 x 132/22 kV 10 MVA Star/Delta Transformer,
- 1 x 132 kV Transformer bay,
- 4 x132 kV Feeder bays,
- 1 x 132 kV Bus Coupler bay,
- 3 x 132 kV VT’s on Busbar 1 & 2,
- 22 kV Strung single Bull conductor bus-bar
- 1 x 22 kV Transformer / NEC/NER/Aux Trfr.-1 Bay,
- 1 x 22/0.4 kV 315 kVA Dyn11 Aux. Trfr-2 Bay,
- 1 x 22 kV Feeder Bay,
- 1 x Spare Bay
- 3 x 22 kV Busbar VT’s
- An oil dam (approximately 400 litres);
- 15m x 15m control room;
- Communication mast;
- Dirt road for site access;
- A flood light in one corner; and
- A fence around the switching station.

9. LEGISLATION

The legislation that was considered in the preparation of this report included the following:

9.1. National Environmental Management Act (Act 107 of 1998)

This EMPR has been developed in accordance with Environmental Impact Assessment Regulation 34 in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998).

All legislation relevant to the Scoping/EIA process has been followed. Part of the requirements of R.385 is the development of a draft EMPR.

All requirements relevant to the construction and operation of a switching station and its associated features as determined in this Act should be followed.

9.2. National Environmental Management: Biodiversity Act (Act 10 of 2004)

All requirements relevant to the construction and operation of a switching station and its associated features as determined in the Biodiversity Act should be followed.

9.3. National Heritage Resources Act (Act 25 of 1999)

This Act is concerned with the determination of areas of special interest to the public. The presence of any heritage resources is not expected, however a clause has been included within this EMPR that provides for the unexpected unearthing / excavation of heritage resources. This states that should any heritage resources be found while construction occurs then work must stop. A museum, preferably one with an archaeologist, must be contacted immediately so an investigation and evaluation of the finds can be made. Work in the area can only be resumed once the site has been completely investigated.

9.4. National Water Act (Act 36 of 1998)

Section 21 of the above Act is concerned with water licenses. This Section describes all aspects of water use requiring the responsible authorities consent. Although this Act was considered, due to the distance of any water bodies from the site, it was found to not be applicable.

9.5. National Forests Act (Act 73 of 1998)

This Act is concerned with the licensed removal of declared trees. A specialist Flora and Fauna study was commissioned to look at the study sites. Protected trees were found on all three sites, a permit is required from the Department of Water Affairs and Forestry (DWAF) for the removal of these trees.

9.6. National Veld and Forest Act (Act 101 of 1998)

Section 12 of this Act renders firebreaks compulsory to landowners from whose land a veldfire may start, burn or spread. If it is determined that any land acquired for the purpose of constructing the switching station may start, burn or spread a veldfire then it would be compulsory for Eskom to implement firebreaks.

9.7. National Environment Management: Air Quality Act (Act 39 of 2004)

This Act refers to controlling diesel emissions. If Eskom uses diesel vehicles, they must be regularly monitored for compliance with this Act.

9.8. Conservation of Agricultural Resources Act (Act 43 of 1983)

This Act refers to not using the vegetation of a watercourse within a floodline or within 10 horizontal meters outside a flood area that may result in the deterioration or damage to natural agricultural resources. This section of this legislation is not relevant as there are no watercourses in the vicinity of the sites.

This Act also requires that any declared invader species on Eskom land be controlled according to their declared invader status. The EMPR has made provision for the removal of alien vegetation from the construction areas.

9.9. National Road Traffic Act (Act 83 of 1996)

This Act is relevant if Eskom intends to transport, load, off-load or package dangerous goods as listed in SANA Code of Practice 10228.

In addition to the above – mentioned legislation, the local by-laws should be taken into account during all project phases.

9.10. Explosives Act (Act 15 of 2003)

This Act is concerned with the control of explosives including the inspection of explosives used and the sites they are used at and the penalties of not complying with the Act. If blasting is required then Eskom must comply with this Act and any associated Regulations.

10. GUIDELINES

The following Eskom guidelines should be considered where applicable:

- "The Safe Use of Pesticides and Herbicides" during the operation of the switching station and associated structures (ESKASAAL0), Appendix 4;
- "Transmission Servitudes Gates Standard" should be used during the construction and operation of the switching station (TGL41-338) Appendix 5;
- "Standard for Bush Clearance" (ESKASABG3) Appendix 6;
- "Storage handling flammable liquids" (ESKAMAAD1) Appendix 7;
- "Transmission Towers and Line Construction" (TRMSCAAC1) Appendix 8; and
- "Transmission Vegetation Management Guideline" (TGL41-334) Appendix 9.

11. RESPONSIBILITIES OF TEAM MEMBERS

The responsibility for enforcing the implementation of the EMPR lies with Eskom Holdings SOC Ltd.

11.1. Eskom Environmental Practitioner / Advisor (during feasibility stages & construction phases):

- To ensure that an un-biased, environmental impact assessment (EIA) with a thorough public participation is conducted for the proposed project. Such assessment to be in accordance to the latest legislation and acceptable to all interested and affected parties and to finally be approved by the relevant authority;
- To secure an uncontested Environmental Authorisation;
- To project manage the independent Environmental Consultants throughout the EIA life cycle and to ensure that a practical Environmental Management Programme (EMPR) for the construction phase of a project is compiled and approved by the relevant and appropriate government authorities;
- To ensure that all conditions as stipulated in the Environmental Authorisation are met; and
- To conduct spot audits during construction.

11.2. Servitude Negotiator:

- To negotiate servitude on private and public owned properties; and
- To identify landowner conditions & requirements.

11.3. Project Manager/ Site Manager:

- Represents and acts on behalf of Eskom Transmission regarding the administration of contracts;
- In consultation with the system Planning Engineer, determines the scope of work;
- To provide scheduling aspects of co-ordination and estimating;
- Ensure implementation of the project plan within cost, time and quality constraints;
- Ensure that implementation of EMPR is executed as planned; and
- Keep the asset owner informed of progress made during the life cycle of the project.

No work shall commence until permission is granted from the Environmental Advisor from Transmission Services and the Environmental Authorisation from the Department of Environmental Affairs (DEA) has been obtained. The Project Manager shall ensure that all conditions of the Environmental Authorisation are fulfilled before the Contractor occupies the site. The Grid shall be kept informed of all developments on construction at all times. All the requirements from the Grid must be considered during the construction phase to ensure smooth transition.

11.4. Environmental Control Officer:

The Environmental Control Officer shall convey the contents of this document, the conditions of the Environmental Authorisation from DEA as well as the Landowner conditions to the Contractor's site staff and discuss the contents in detail with Eskom's 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 date, people whom attended and discussion points shall be kept by the ECO. Included in the formal induction training is ensuring the Contractor, Site Agent, Construction Supervisor and Safety Officer are conversant with the mitigation measures, and to verify that the Contractor's Employees have undergone induction on these measures.

The ECO shall monitor the execution of the mitigation measures and ensure the safeguarding of the environment.

The ECO shall make contact with the local Extension Officer of the Department of Agriculture and the Chairpersons of the Farmers Associations where the route traverses, as these contacts have valuable information about the area and the local farming community.

Landowners shall therefore be informed timeously of the construction programme, duration and all interference with their daily activities.

The contact numbers of the ECO and Contractor Environmental Control Officer (CECO) shall be made available to Landowners.

The ECO officer will report progress made on a monthly basis to the Project Manager and Land Development Environmental Impact Assessment Project Manager. These reports shall be available at all times, on site or in the project file and on request by auditors, DEA and other Interested and Affected Parties (I&APs).

The ECO shall record all non-conformances and action plans to ensure that measures are put in place to remedy possible effect.

The ECO shall facilitate communication between I&APs, Eskom Holdings SOC Ltd and the contractor.

11.5. Contractor:

- To provide all necessary supervision during the execution of the project. He/ She should be available on site all the time;
- To appoint a competent CECO;
- To implement the projects as per the approved project plan;
- To ensure that implementation is conducted in an environmentally acceptable manner;
- To fulfil all obligations as per the agreed contract;
- To comply with special conditions as stipulated by Landowners during the negotiation process; and
- To inform and educate all Employees about the environmental risks associated with the different activities that should be avoided during the construction process and lessen significant impacts to the environment.

11.6. Eskom Environmental Practitioner (During Operational Stage):

- To implement and integrate environmental management systems by ensuring compliance to ISO 14000 & monitoring performance;
- Reports environmental incidents;
- Provides environmental training; and
- Ensures compliance to legislations and other legally binding documents.

11.7. Environmental Consultants:

- Investigate and produce assessment of impacts on the environment related to the project;
- Ensure the implementation of a thorough public participation process;
- Draft and submit Scoping and Environmental Impact Report (EIR) to relevant Government Departments; and
- Draft EMPR and submit for approval to the relevant Government Departments.

11.8. Authorising Department:

To provide Environmental Authorisation on all applications lodged for the proposed Transmission lines, substations and related activities.

12. MITIGATION MEASURES

In the Final EMPR below, general mitigation measures are provided for the planning phase, while specific measures are listed to address the identified environmental impacts during the construction and operation stages of the project. General mitigation measures are provided for the decommissioning phase of the project lifecycle, more specific measures should be proposed before the switching station is decommissioned to take into account any changes that may have occurred to the surrounding environment.

12.1. Construction Phase:

The main construction activities will include the following:

- Site preparation;
- Earthworks (excavations, etc.);
- Switching station construction; and
- Site reinstatement and landscaping.

13. PROJECT LIFECYCLE

During its lifecycle, projects journey through four distinctive phases, as presented in Figure 1. The EMPR deals with the planning, construction, operation and decommissioning phases.

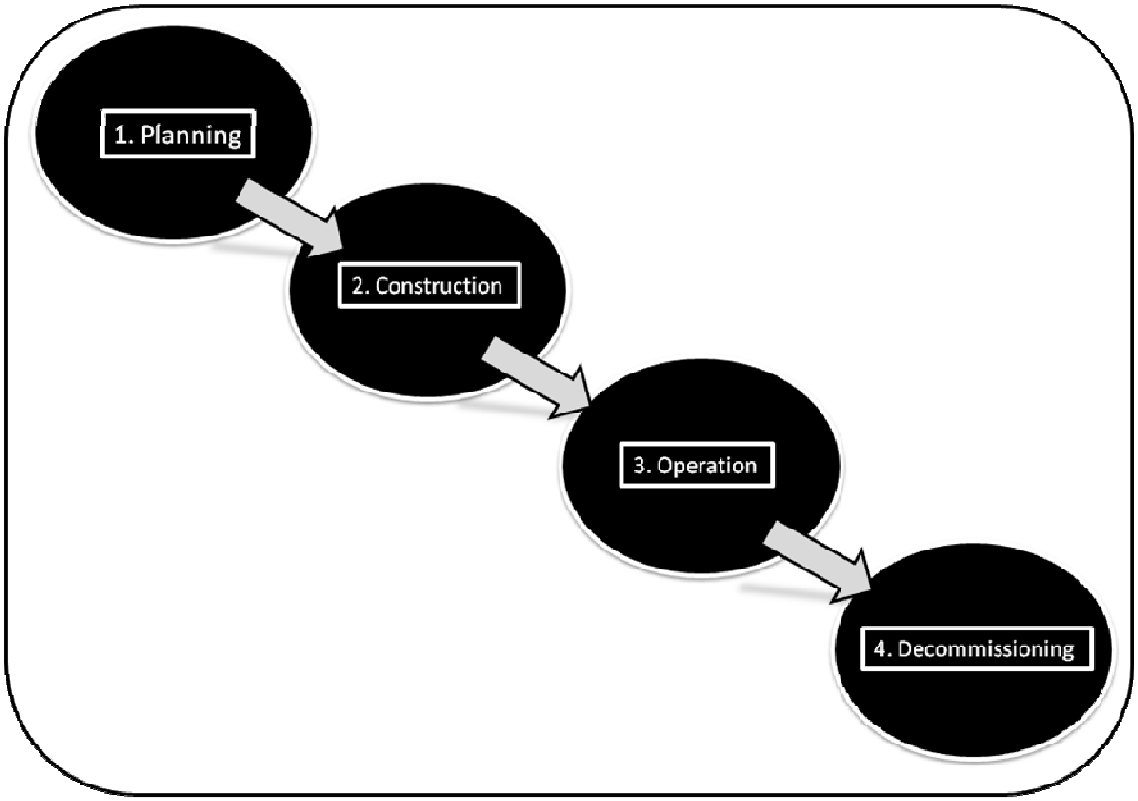

Figure 1: The four phases of a project lifecycle

14. ENFORCEMENT

The responsibility for enforcing the implementation of the EMPR lies with Eskom Holdings SOC Ltd. It is the responsibility of the Environmental Control Officer (ECO) to monitor the Principal Contractor.

The ECO is responsible for the following:

- To monitor the execution of the mitigation measures and to ensure the safeguarding of the environment;
- To facilitate communication between I&APs, Eskom Holdings SOC Ltd and the contractor;
- To inspect the construction site on a monthly basis and to prepare a monitoring report which will be forwarded to the project team and representatives from the I&APs (i.e. community members); and
- To train the Contractor, Site Agent, Construction Supervisor and Safety Officer on the mitigation measures and to verify that the Contractor's Employees have undergone induction on these measures.

The abovementioned monitoring report will include a checklist and an issues list. The checklist will be completed by awarding the following scores, based on the level of compliance;

Compliance Score	Description
1	Task not achieved
2	Task 20% completed
3	Task 50% completed
4	Task 80 % completed
5	Task 100% completed

Where non-compliance is encountered (i.e. Compliance Score < 5), the significance of the associated impact will be recorded, based on the following guidelines:

Impact Scores	Impact
1	**Low** – mitigation not needed
2	**Medium** – mitigation should be considered
3	**High** – mitigation compulsory

The issues list will highlight the most pertinent issues that require mitigation, and provide the deadline for compliance. The following EMPR was compiled to mitigate against any negative impacts identified in the EIA Report for the Dwaalboom Switching Station and its associated secondary infrastructure.

15. Project Phase: Pre-Construction and Construction Phase

15.1. Agreement Statement

Management Component	Primary Objectives	Monitoring Criteria	Duration	Frequency	Responsible Party
Agreement Statement	Ensure that the developer knows and understands the contents of the EMPR and is able and willing to comply with all legislation pertaining to the nature of the work to be done, and all things incidental thereto.	The Declaration form attached should be signed by the developer. One original copy of this agreement must be submitted to DEA Monitoring and Compliance division. The Eskom and the ECO should also receive a copy.	Prior to commencement	Once-Off	Project Manager (Eskom)
	A method statement is required from the contractor that includes the layout of the construction and contractor's camp, management of ablution facilities as well as waste management	Method Statement	Prior to commencement	Once-Off	Contractor

15.2. Negotiation with Affected Landowners

Management Component	Primary Objectives	Monitoring Criteria	Duration	Frequency	Responsible Party
Negotiations with Affected Landowners	Eskom will ensure that the affected landowners are negotiated with prior to the commencement of construction activities.	Signed landowner consent forms.	Prior to commencement	Once-Off	Eskom

15.3. Commissioning of the Tender

Primary Objective: Ensure that proper environmental foundations are established prior to commencing with construction by informing all parties of appropriate environmental protection measures.

Management Component	Primary Objectives	Monitoring Criteria	Duration	Frequency	Responsible Party
Commissioning of the Tender	All tendering contractors will be made aware of the contents of this EMPR and any penalties arising from non-compliance prior to the commencement of work.	Signed Declaration by contractor.	Prior to commencement	Once-Off	Project Manager

Management Component	Primary Objectives	Monitoring Criteria	Duration	Frequency	Responsible Party
	All tendering contractors will be made aware of the audit and monitoring requirements as stipulated in this EMPR.	Signed Declaration by contractor.	Prior to commencement	Once-Off	Project Manager
	Appoint an Environmental Control Officer (ECO) who will be responsible to monitor compliance to the EMPR.	Appointment Letter	Prior to commencement	Once-Off	Project Manager
	Inform ECO of any proposed alterations to the EMPR. The ECO should be notified well in advance of any alternations to the EMPR.	Signed Decision Note	Prior to commencement	Once-Off	Project Manager

15.4. Construction Initiation

Primary Objective: To ensure that necessary contractual agreements/conditions and legal obligations are met prior to the commencement of construction activities.

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Construction Initiation	The Project Manager will inform the Environmental Control Officer (ECO) of the construction commencement date.	Notification Letter	Prior to commencement	Once-Off	Project Manager
	The ECO shall remain employed until all areas impacted on as a result of construction activities have been rehabilitated and the site is handed over to Eskom by the contractor for operation.	ECO appointment letter and construction timeframe.	Prior to commencement	Once-Off	Project Manager
	The ECO to inform the relevant authority of the due date that work will commence.	Letter to authorities	Prior to commencement	Once-Off	ECO
	A copy of the authorisation must be kept on site to be available to present to any authorised official of the Department that may request to view the authorisation during inspection activities.	Inspection of the required documentation	Throughout Construction	Monthly	Project Manager / ECO
	The ECO should be introduced to the Project Team	ECO to be introduced to project team and contact details of the ECO to be made available to the project team.	Prior to commencement	Once-Off	Project Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	The ECO to induct all contractors on the EMPR and environmental authorisation prior to commencement of any works.	Presentation, induction checklist and attendance register	Prior to commencement	Once-Off	ECO
	ECO is to undertake monthly audits of all construction activities for compliance against the EMPR.	ECO Audit Dates.	Prior to commencement	Once-Off	ECO
	The ECO shall maintain the following on site: • A daily site diary; • A non-conformance register; and • A public complaint registers.	Inspection of the required documentation	Throughout Construction	Monthly	Project Manager
	All correspondence from ECO must be filed and kept on site.	File on-site containing all correspondence.	Throughout Construction	Monthly	Project Manager
	An electronic database of all audit findings must be available for authority review.	Active database of audit findings, recommendations & follow ups.	Throughout Construction	Monthly	ECO
	The name and contact details of the person/people responsible for ensuring and monitoring of compliance to the EMPR should be made available to the DEA prior to the commencement of construction activities.	Letter to the relevant DEA officer, providing relevant contact details.	Prior to commencement	Once-Off	ECO

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Notify the representatives from the community (I&AP's) on the communication channels to be followed.	(a) Complaints register to be made available, and (b) All communication and complaints must be directed to the ECO and CLO to escalate it to the relevant parties.	Prior to commencement	Once-Off	ECO

15.5. Construction Site Planning and Layout

Primary Objective: To ensure that environmental constraints outlined in the EMPR are adhered to during site planning and layout.

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Construction Site Planning and Layout	The construction camp site selection should be done in consultation with the landowners and ECO.	Written comment and recommendations from the landowners	Prior to commencement	Once-Off	Contractor, ECO and Project Manager
	The Contractor must negotiate with landowners and adjacent landowners for permission and the right to establish a Construction Camp on their land.	Written comment and recommendations from the landowner regarding the negotiations.	Prior to commencement	Once-Off	Contractor, and Project Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	A written contractual agreement regarding the specific terms and conditions of the use of the land, should be developed between the landowner and contractor. The Contractor may not commence with any site establishment activities, prior to the signing of the contractual agreement by the landowner.	Written Contractual Agreement between the landowner and contractor.	Prior to commencement	Once-Off	Contractor, and Project Manager
	Prior to commencement of construction, the contractor will inform the construction manager and ECO of the intended actions and programme for site establishment.	Record of notification and minutes of meetings.	Prior to commencement	Once-Off	Contractor
	The contractor's hard park and storage yard will be located at the designated area as specified by the construction manager.	Site Plan.	Prior to commencement	Once-Off	Construction Manager
	The construction site, construction road for access to the site, and materials lay down area will be demarcated prior to construction by the contractor. No disturbance outside the demarcated road will be permitted.	Presence of demarcation.	Prior to commencement	Once-Off	Contractor

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	The contractor will supply a site plan for the contractor's camp for the project manager's approval. Structures must be located to reduce visual intrusion and minimal disturbance to the biophysical environment.	Signed and dated approved site plan.	Prior to commencement	Once-Off	Contractor / Project Manager
	The Contractor shall not locate campsites in any areas marked as 'no-go' areas, or within 100m of any watercourse.	Audited site plan, and demarcation on the ground.	Prior to commencement	Once-Off	Contractor and ECO

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Documentation for the proposed camp site should be prepared by the contractor prior to the commencement of construction activities, and should be submitted to Eskom for approval. This documentation should include, but should not be limited to the following: • site layout including access points and material storage areas; • topsoil management; • cuts and fills; • sewage treatment; • erosion control; • fencing; • general waste management; • provision for vehicle and plant servicing; • management of hazardous materials, • water supply; • management of veld fire risk; • Rehabilitation.	All related documentation.	Prior to commencement	Once-Off	Contractor / Project Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Damage to sensitive areas will incur a fine and all impacts must be rehabilitated and/or environmental compensation must be made.	Audit of special features during construction – findings and recommendations recorded in active database.	Throughout Construction	Monthly	ECO
	Movement of construction vehicles and machinery must be restricted to areas outside of the sensitive habitats on site.	Auditing of vehicle traffic and machinery on a monthly basis with findings and recommendations recorded on database.	Throughout Construction	Monthly	Project Manager
	The site planning should ensure that no stormwater may enter the natural drainage system directly, but rather be diverted and dispersed into the natural vegetation for absorption.	The site plan should include stormwater management measures and these must be audited monthly and recorded.	Throughout Construction	Monthly	Project Manager
	The site plan should ensure that temporary stormwater management measures for construction purposes are implemented as per the stormwater Management Plan.	Stormwater management plan must be audited against by the ECO.	Prior to commencement	Once-Off	Project Manager

15.6. Site Establishment

Primary Objective: To ensure that the site is established in line with pre-approved plans, and maintained in a safe manner throughout the duration of the project.

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Site Establishment	The contractor's hard park and storage yard will be fenced, to the satisfaction of the construction manager. It is a requirement that the fence is maintained until such time that the project is completed.	Monthly inspections of all fences.	Throughout Construction	Daily	Construction Manager / Contractor / ECO
	The construction site must be barricaded off to prevent access by unauthorised persons.	Erection of Barricades, daily inspection of all barricades.	Throughout Construction	Daily	Construction Manager / Contractor / ECO
	A site notice must be erected at the construction site informing persons of restricted access, the nature and time frames of the construction activities and contact details.	Site notice. Weekly inspection of site notices. Notices should be replaced where necessary.	Throughout Construction	Daily	Construction Manager / Contractor

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Site structures, must be fitted with appropriate cladding and colouring to ensure reduced reflection and visual pollution.	Observation of visual intrusiveness of structures.	Prior to commencement	Once-Off	Construction Manager / Contractor
	Access to the site will only be permitted via the designated construction road as specified on site by the construction manager. The Contractor will control the movement of all vehicles and plant (including suppliers), such that they remain on designated routes, comply with relevant laws and ensure they are distributed so as not to cause an undue concentration of traffic.	Observations of construction activities, and site disturbances. Incidence reports and corrective action.	Throughout Construction	Daily	Construction Manager / Contractor
	On gravel or earth roads on site the vehicles of the Contractor and their suppliers will not exceed a speed of 20 km/hr.	Intermittent observation.	Throughout Construction	Daily	Construction Manager / Contractor

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Access roads will be maintained by the Contractor. The Contractor will erect and maintain marker pegs along the boundaries of the working areas, access roads, haul roads or paths, to the satisfaction of the Construction Manager, before commencing any other work. If proved insufficient for control, these will be replaced by fencing, with the additional cost being borne by the Contractor.	Observations of marker pegs, on plan and on the ground. Observation of disturbances and construction practices.	Prior to Commencement and Throughout Construction	Daily	Construction Manager / Contractor
	The movement of any vehicles and/or personnel outside of designated working areas will not be permitted.	Observations of areas surrounding the construction area.	Throughout Project	Daily	Construction Manager / Contractor
	Dust control measures, such as dampening with water will be implemented where necessary.	Number of water trucks. Observations of dust levels. *Water must not be abstracted from any waterbodies.*	Throughout Construction	Daily	Construction Manager / Contractor
	Construction debris will be cleared regularly.	Signed removal and dumping slips. Site observations.	Throughout Construction	Weekly	Construction Manager / Contractor

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Damage to the existing access roads as a result of construction activities (during construction), will be repaired to the satisfaction of the Project Manager. The cost of the repairs will be borne by the Contractor.	Signed off by ECO.	Throughout Construction	Weekly	Construction Manager / Contractor
	All existing farm roads (private roads) damaged during the construction phase, should at the end of construction be repaired to the satisfaction of the landowner, as per the conditions of the written contractual agreement between the landowner and the contractor.	Written contractual agreement.	End of Construction Phase	Once-off	Contractor, and Project Manager
	Traffic safety measures (e.g. traffic warning signs, flagmen) will be erected to the satisfaction of the Project Manager where required.	To be monitored according to specific requirements.	Throughout Construction	Daily	Construction Manager / Contractor
	Ensure that access to the site, including related infrastructure and machinery is restricted to authorised personnel only.	Security Register.	Throughout Construction	Weekly	Construction Manager / Contractor

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Ensure that access roads to the site are of a suitable quality to eliminate soil erosion, and channel storm water into grass buffer area.	Record of soil erosion points and extent of damage.	Throughout Construction	Weekly	Construction Manager / Contractor
	Ensure that 'No-Go' areas are clearly demarcated and/or fenced before construction starts. Barriers are to be maintained in good order throughout the course of the construction.	Site photographs and intermittent observations.	Throughout Construction	Daily	Construction Manager / Contractor
	The contractor is to ensure that no machinery, personnel, material, or equipment enters 'No-Go' areas at all times during the course of the project.	Observations of disturbance in No Go areas.	Throughout Construction	Daily	Construction Manager / Contractor

15.7. Access Gates and Fences

Primary Objective: To ensure that fences damaged or removed during the construction activities of the proposed substation and loop-in lines are adequately restored or rebuilt to an acceptable standard.

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Access Gates and fences	All gates and fences to be constructed as part of the proposed project should be constructed in terms of the Fencing Act, Act no 31 of 1963.	Fencing Act (Act 31 of 1963).	Prior to Construction	Once-off	Project Manager / Contractor
	Gate installation shall be according to TRMSCAAC1 Rev 3 Section 4.5.	TRMSCAAC1	Prior to Construction	Once-off	Project Manager / Contractor

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	The contractor shall ensure that gates are always closed and locked after anyone has driven through it.	Daily inspections	Throughout Construction	Daily	Contractor
	The construction site, construction camp, contractor's camp and all trenches should be properly fenced off to prevent animals from entering into these areas and getting injured.	Daily inspections	Throughout Construction	Weekly	Contractor / Project Manager
	Fences and gates damaged during the construction phase due to construction activities or negligence by construction workers, should be replaced or fixed to the satisfaction of the landowner.	Daily inspections	Throughout Project	Weekly	Site Manager / ECO

15.8. Materials Handling, Use and Storage

Primary Objective: Effective and safe management of materials on site, in order to minimise the impact of these materials on the natural environment.

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Materials Handling, Use and Storage	The Contractor will ensure that delivery drivers are informed of all procedures and restrictions required to ensure compliance with this document. Such drivers will be supervised during off-loading, by a person knowledgeable of the requirements.	Signed declaration by driver, Intermittent observation.	Throughout Construction	Throughout	Construction Manager / Contractor
	Materials will be appropriately secured to ensure safe passage between destinations. Loose loads (e.g. sand, stone chip, refuse, 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.	Intermittent observation	Throughout Construction	Throughout	Construction Manager / Contractor
	Imported fill / soil / sand materials will be free of weeds, litter and contaminants.	Intermittent observation	Throughout Construction	Throughout	Construction Manager / Contractor

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	All material lay-down areas and stockpiles will be subject to the Site Manager's approval	Intermittent observation	Throughout Construction	Throughout	Construction Manager / Contractor
	Storage areas will be roofed with an impervious material, with a suitable overhang or side-cladding. Rainwater run-off will be channelled away from the storage area as required.	Site photographs and intermittent observations.	Prior to construction	Once-off	Construction Manager / Contractor

15.9. Hazardous Substances

Primary Objective: To ensure the safety and protection of the natural environment and all personnel on site, by the correct management and handling of hazardous substances.

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Hazardous Substances	All potential hazardous substances to be used during the construction phase should be identified and a register should be compiled to keep record of all substances kept on site and delivered to site.	Hazardous Substances Register	Throughout Construction	During deliveries of hazardous substances to site.	Site Manager / Contractor

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Cement mixing will occur in a designated area on an impervious layer (e.g. plastic or cement mixing pit). The runoff water will be contained for re-use in cement mixing or disposed of to the waste water system. Contaminated water will not be dispersed to the environment.	Visual inspection of cement mixing site	Throughout Construction	Throughout	Construction Manager / Contractor
	Unused cement bags will be stored in an area not exposed to the weather and packed neatly to prevent hardening or leakage of cement.	Cement lay down area	Throughout Construction	Throughout	Construction Manager / Contractor
	No paint products may be disposed of on the site. All paint containers will be removed from the site.	Disposal record to proof that containers have been removed to a licensed hazardous waste landfill site.	Throughout Construction	Throughout	Construction Manager / Contractor
	Oil based paints and chemical additives and cleaners (e.g. thinners and turpentine) will be strictly controlled.	Disposal record to proof that containers have been removed to a licensed hazardous waste landfill site.	Throughout Construction	Throughout	Construction Manager / Contractor
	A painting control work instruction must be established for the site, including disposal of material and the washing of brushes / rollers. No contaminated water or solvents may be disposed of to the veld.	Sign off from ECO.	Throughout Construction	Throughout	Construction Manager / Contractor

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	The Contractor may not store in above ground containers a combined volume of fuel equal to or greater than 30 cubic meters on the site without the appropriate Environmental Authorisation. All fuel storage areas will be bunded to contain at least 110 % of the volume stored and will be provided with a hard impervious surface.	Site photographs and intermittent observations.	Throughout Construction	Throughout	Construction Manager / Contractor
	The Contractor will ensure that there is a supply of absorbent material (e.g. sawdust, supazorb) readily available to absorb, breakdown and where possible encapsulate minor hydrocarbon spillage. The amount and type of absorbent material will be appropriate to the volumes of hydrocarbons kept on site. Each construction site must have a spill kit available during all times.	Site photographs and intermittent observations.	Throughout Construction	Throughout	Construction Manager / Contractor

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Potential pollutants will be kept, stored, and used in such a manner that any escaped pollutants can be contained and the water table not endangered (e.g. bunded hydrocarbon storage area). Bund walls must be of a sufficient height to contain at least 110% of the volume of any materials stored within the bunded area.	Site photographs and intermittent observations.	Throughout Construction	Throughout	Construction Manager / Contractor
	Absorbent material will be spread on all areas where oil spills are expected for the duration of the construction phase. This material is to be removed post-construction and disposed of in a responsible manner. Soils contaminated by minor hydrocarbon spills should be removed immediately to a designated hazardous waste storage bin to be removed off site and disposed of at a licensed hazardous waste disposal facility. The waste and water manager is to be informed of the procedure.	Disposal records and intermittent observations.	Throughout Construction	Throughout	Construction Manager / Contractor

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Hazardous materials will be disposed of at registered sites or handed to registered hazardous waste disposal facilities for disposal / recycling.	Disposal records	Throughout Construction	Throughout	Construction Manager / Contractor
	The Contractor will notify the Project Manager and the ECO immediately of any pollution incidents.	Incident reports and intermittent observations.	Throughout Construction	Throughout	Construction Manager / Contractor
	Refuelling should be confined to designated areas. These designated refuelling areas should be underlain by an impermeable surface to ensure that fuel spillages do not come into contact with soil.	Incident reports and intermittent observations.	Throughout Construction	Throughout	Construction Manager / Contractor

15.10. Daily On-Site Activities

Primary Objective: To ensure the day to day function of the site is well managed with minimum impact to the surrounding environment.

15.10.1. Workshop, Equipment Maintenance and Storage

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Workshop, Equipment Maintenance and Storage	Due to the remote location of the site emergency repairs of vehicles and machinery on site should be allowed under strict management measures. Drip trays should be strategically placed during maintenance or repair activities to avoid accidental and incidental hydrocarbon leaks and spillages	Intermittent observations.	Throughout Construction	When undertaking maintenance or repair activities	Site Manager
	Movement of construction vehicles and machinery must be restricted to areas outside of sensitive areas on site.	Intermittent observations.	Throughout Construction	Daily	Site Manager
	Drip trays will be provided for the stationary vehicles and machinery.	Intermittent observations.	Throughout Construction	Daily	Site Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Drip trays should be emptied on a daily basis and should be serviced / repaired when necessary. Drip trays should be monitored closely during rain events to ensure that they do not overflow.	Intermittent observations.	Throughout Construction	Daily	Site Manager
	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.	Service Records, and Intermittent observations.	Throughout Construction	Daily	Site Manager
	The relevant contractor must ensure that facilities for the collection of hydraulic and other vehicle oils are provided within the hard park area.	Site Plan and Intermittent observations.	Throughout Construction	Daily	Site Manager

15.10.2. Location of the Contractor's Camp

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Location of Contractors Camp	The Contractor's camp shall be sited so as to cause the least amount of disturbance to adjacent landowners.	Relation of disturbance to site plan. Presence of demarcation.	Prior to Construction	Once-off	Project Manager / Site Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	The contractor's camp shall be fenced and the contractor shall maintain the fence in good order for the duration of construction.	Site Plan and intermittent observations	Throughout Construction	Daily	Project Manager / Site Manager

15.10.3. Labour and Social Issues

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Labour and Social Issues	The contractor shall ensure proper supervision of employees at all times.	Intermittent observations.	Throughout Construction	Daily	Contractor / Site Manager
	Preference should be given to the local community for unskilled labour.	Record of workers.	Throughout Construction	Daily	Contractor / Site Manager
	The contractor shall ensure workers refrain from trespassing on surrounding private property. Immediate and decisive action shall be taken should this occur.	Intermittent observations.	Throughout Construction	Daily	Contractor / Site Manager
	Machine / vehicle operators shall receive clear instructions to remain within demarcated access routes and construction areas.	Intermittent observations.	Throughout Construction	Daily	Contractor / Site Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Designated smoking areas should be provided, with special bins for discarding of cigarette butts.	Intermittent observations.	Throughout Construction	Daily	Contractor / Site Manager

15.10.4. Traffic

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Traffic	The relevant traffic authorities must be contacted for any anticipated disruptions, in addition the Southern African Road Traffic Signs Manual must be complied with.	Proof of communication with the traffic authorities and intermittent observation.	Throughout Construction	Throughout	Project Manager / Contractor

15.10.5. Toilet / Ablution Facilities

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Toilet / Ablution Facilities	The Contractor must provide sufficient ablution facilities, in the form of mobile / portable / VIP toilets, at the Construction Camps and along construction sites, and shall conform to all relevant health and safety standards and codes. No pit latrines, French drain systems or soak away systems shall be allowed and toilets may not be situated within 100 meters of any water body or the 1:100 year flood line. A sufficient number of toilets shall be provided to accommodate the number of personnel working in any given area. Toilet facilities supplied by the contractor for the workers shall occur at a maximum ratio of 1 toilet per 30 workers. Separate toilets must be provided for the different genders. All temporary / portable / mobile toilets shall be secured to the ground to prevent them from toppling due to wind or any other cause. Toilets may not be further than 100m from any working area.	Site Plan and intermittent observations	Throughout Construction	Throughout	Site Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Prior to establishment of the ablution facilities, the Site Manager will approve an appropriate location.	Site Plan and intermittent observations	Prior to Construction	Once-off	Site Manager
	The contractor shall ensure the provision and proper utilisation, maintenance and management of toilet, wash and waste facilities.	Site Plan and intermittent observations	Throughout Construction	Throughout	Contractor / Site Manager
	These facilities will be maintained in a hygienic state and serviced regularly. Toilet paper will be provided.	Service Records and intermittent observations	Throughout Construction	Throughout	Contractor / Site Manager
	The Contractor will ensure that no spillage occurs when the toilets are cleaned or emptied and that a licensed service provider removes the contents from site.	Service Records, waste collection slips and intermittent observations	Throughout Construction	Throughout	Contractor / Site Manager
	Disposal of such waste is only acceptable at a licensed waste disposal facility.	Waste collection slips	Throughout Construction	Throughout	Site Manager

15.10.6. Construction Camp and Eating Areas

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Construction Camp and Eating Areas	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.	Intermittent observations	Throughout Construction	Throughout	Contractor / Site Manager
	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.	Intermittent observations	Throughout Construction	Throughout	Contractor / Site Manager
	Eating areas will be designated and demarcated.	Site Plan and Intermittent observations	Throughout Construction	Throughout	Contractor / Site Manager
	The feeding, or leaving of food for animals, is strictly prohibited.	Intermittent observations	Throughout Construction	Throughout	Contractor / Site Manager
	Sufficient vermin / weatherproof bins will be present in this area for all waste material.	Intermittent observations	Throughout Construction	Throughout	Contractor / Site Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	No fires for the purpose of cooking or warming purposes will be permitted other than within designated areas, for instance, at the site camp.	Intermittent observations	Throughout Construction	Throughout	Contractor / Site Manager
	Dish washing facilities will be provided. These may be very basic, but a process must be put in place to ensure that wastewater is disposed of appropriately.	Intermittent observations	Throughout Construction	Throughout	Contractor / Site Manager

15.11. Aesthetics

Primary Objective: To ensure that the visual appearance of the construction site is not an eye-sore the adjacent areas.

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Aesthetics	Lighting will be sufficient to ensure security but will not constitute 'light pollution' to the surrounding areas.	Lighting direction and down lighting	Throughout Construction	Throughout	Contractor / Site Manager
	The site will be shielded from the adjacent landowners to minimise the visual impact where this is feasibly possible.	Lighting direction and down lighting	Throughout Construction	Throughout	Contractor / Site Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Site structures, albeit temporary, must be fitted with appropriate cladding and colouring to ensure reduced reflection and visual pollution.	Intermittent observations.	Throughout Construction	Throughout	Contractor / Site Manager
	The rehabilitation of the disturbed areas will prevent the exposure of soil, which may cause a reduction in the visual quality of the study area.	Vegetation Management Plan	Throughout Construction	Throughout	Contractor / Site Manager

15.12. Waste Management

Primary Objective: To ensure the efficient management of waste on site to ensure that minimal impacts occur on the surrounding natural environment.

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Waste Management	Vermin / weatherproof bins will be provided in sufficient number and capacity to store all solid waste produced on a daily basis. These bins must be kept closed to reduce odour build-up and emptied regularly (minimum weekly) such that they do not overfill.	Intermittent Observations.	Throughout Construction	Weekly	Project Manager / Site Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Waste must be separated at source (e.g. containers for glass, paper, metals, plastics, organic waste and hazardous wastes).	Intermittent Observations.	Throughout Construction	Weekly	Project Manager / Site Manager
	The contractor must ensure the provision of waste skips on site. These skips should be sufficient in number, the skip storage area should be kept clean, skips should be emptied and replaced before overflowing or spillage occurs.	Intermittent Observations.	Throughout Construction	Weekly	Project Manager / Site Manager
	The project manager will ensure that no burying, dumping or burning of waste materials, vegetation, litter or refuse occurs. All solid waste will be disposed of at suitable licensed disposal sites.	Disposal Records and Intermittent Observations	Throughout Construction	Weekly	Project Manager / Site Manager
	Wherever possible, materials will be recycled via a “Greens waste site”.	Disposal Records	Throughout Construction	Weekly	Project Manager / Site Manager
	Containers of brake and clutch fluid, oil etc. although initially containing potentially hazardous wastes when disposed of contain minimal amounts thereof and may be disposed of as standard domestic waste.	Disposal Records	Throughout Construction	Weekly	Project Manager / Site Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Waste should be removed during off-peak periods to minimise impacts on local traffic patterns.	Intermittent Observations.	Throughout Construction	Weekly	Project Manager / Site Manager
	Waste disposal slips from the waste service providers should be kept on site as proof that wastes are removed from site by licensed waste service providers.	Intermittent Observations	Throughout Construction	Weekly	Project Manager / Site Manager
	Should a registered waste site not be available in close proximity to the construction site, the contractor should provide a method statement with regards to waste management.	Waste Management Method Statement	Prior to Construction	Once-off	Contractor

15.13. Water Management

Primary Objective: To ensure effective water management in order to prevent incorrect diversions of water which result in soil erosion and storm water run-off with negative environmental impacts.

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Water Management	Water supply during the construction phase for construction activities will be obtained from an existing water source and all connections and decommissioning will be the contractor's responsibility on approval of the construction manager.	Potable and stormwater management method statement	Prior to Construction	Once-off	Project Manager / Contractor
	Should the contractor be required to use water from a natural source, or a source other than an existing water source, the contractor shall obtain the necessary permits.	Potable and stormwater management method statement	Prior to Construction	Once-off	Project Manager / Contractor
	The contractor will ensure that the correct and sufficient amount of hosepipes, taps and connections are supplied.	Potable and stormwater management method statement	Throughout Construction	Throughout	Project Manager / Contractor
	The contractor will ensure that no leakage occurs from pipes or dripping taps.	Potable and stormwater management method statement	Throughout Construction	Throughout	Project Manager / Contractor

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	The contractor will comply with the stormwater management plan.	Potable and stormwater management method statement	Throughout Construction	Throughout	Project Manager / Contractor
	The contractor will be responsible for preventing erosion on temporary construction roads.	Potable and stormwater management method statement	Throughout Construction	Throughout	Project Manager / Contractor

15.14. Pollution Generation Potential

Primary Objective: To ensure that all possible causes of pollution are mitigated as far as possible to ensure the minimum impact on the surrounding environment.

15.14.1. Lights

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Light Pollution	Prior to construction the position and type of lighting will be planned to ensure unnecessary light pollution will be eliminated.	Site Plan	Prior to Construction	Once-off	Project Manager / Contractor
	All lighting installed on site must not interfere with road traffic	South African National Roads Agency requirements	Throughout Construction	Throughout	Project Manager / Contractor
	During construction only directional / down lighting will be used for security purposes.	Intermittent Observations	Throughout Construction	Throughout	Project Manager / Contractor
	All lighting installed on site must not interfere with road traffic or lead to unacceptable light pollution to the surrounding community and natural environment (e.g. use of down-lighters).	Down lighting.	Throughout Construction	Throughout	Project Manager / Contractor

15.14.2. Noise

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Noise	The provisions of SABS 1200A will apply to all areas within audible distance of residents.	Intermittent Observations	Throughout Construction	Throughout	Project Manager / Contractor
	No amplified music will be allowed on the site. The use of radios, tape recorders, compact disc players, television sets etc. will not be permitted unless at a level that does not serve as an intrusion to adjacent land-owners.	Intermittent Observations	Throughout Construction	Throughout	Project Manager / Contractor
	Construction activities generating output levels of 85 dB or more will be confined to the hours 07h00 to 17h00 Mondays to Fridays.	Intermittent Observations	Throughout Construction	Throughout	Project Manager / Contractor
	The Contractor will take preventative measures (e.g. screening, muffling, timing, pre-notification of affected parties) to minimise complaints regarding noise and vibration nuisances from sources such as power tools.	Intermittent Observations	Throughout Construction	Throughout	Project Manager / Contractor
	All machinery to be maintained to reduce noise levels.	Intermittent Observations	Throughout Construction	Throughout	Contractor / Site Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Labourers to be provided with hearing protection.	Intermittent Observations	Throughout Construction	Throughout	Contractor / Site Manager
	All blasting must be carried out in accordance with the Explosives Act (Act 15 of 2003).	Intermittent Observations	Throughout Construction	Throughout	Contractor / Site Manager

15.14.3. Dust Generation

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Dust Generation	Contractors will be solely responsible for the control of dust arising from their operations and for any costs against the EMPrloyer for damages resulting from the dust.	Number of water carts and Intermittent Observations	Throughout Construction	Throughout	Contractor / Site Manager
	Appropriate dust suppression measures or temporary stabilising mechanisms will be used when dust generation is unavoidable (e.g. dampening with water, chemical soil binders, straw, brush packs, chipping), particularly during prolonged periods of dry weather.	Number of water carts and Intermittent Observations	Throughout Construction	Throughout	Contractor / Site Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Removal of vegetation will be avoided until such time as soil stripping is required.	Intermittent Observations	Throughout Construction	Throughout	Contractor / Site Manager
	Excavation, handling and transport of erodible materials will be avoided under high wind conditions or when a visible dust plume is present. If dust-damping measures are deemed inadequate, work will cease until wind speeds drop to an acceptable level.	Intermittent Observations and Complaint Register.	Throughout Construction	Throughout	Contractor / Site Manager
	Soil stockpiles will be located in sheltered areas to limit the erosive effects of the wind.	Site Layout Plan	Throughout Construction	Throughout	Contractor / Site Manager
	Vehicle speeds will not exceed 40km/h along dust roads or 20km/h when traversing unconsolidated / non-vegetated areas.	Intermittent Observations	Throughout Construction	Throughout	Contractor / Site Manager
	The Contractor will take preventative measures to minimise complaints regarding dust nuisances (e.g. screening, dust control, timing, pre-notification of affected parties).	Intermittent Observations	Throughout Construction	Throughout	Contractor / Site Manager

15.14.4. Erosion and Sediment Control

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Erosion and Sediment Control	The contractor will compile a stormwater management plan to ensure that clean water is safely diverted around the site and that dirty water is contained and correctly handled.	Stormwater Management Plan	Prior to Construction	Once-off	Site Manager
	No stormwater may be discharged into areas where construction is taking place.	Stormwater Management Plan	Prior to Construction	Once-off	Site Manager
	Stormwater flowing from the development footprint may not be contaminated by any substances, whether the substance is solid, liquid or vapour or any combination thereof.	Stormwater Management Plan	Throughout Construction	Throughout	Site Manager
	During construction, the Contractor will protect areas susceptible to erosion by installing necessary temporary and / or permanent drainage works as soon as possible and by taking suitable measures to prevent surface water concentration into nearby roadways.	Stormwater Management Plan	Throughout Construction	Throughout	Site Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Stormwater shall be channelled away from construction activities.	Potable and stormwater management method statement	Throughout Construction	Throughout	Site Manager
	Silt trap mechanisms will be installed on all temporary stormwater channels. These silt traps will be regularly checked and serviced as required.	Potable and stormwater management method statement	Prior to Construction	Once-off	Site Manager
	All excavated and filled slopes and stockpiles must be of a stable angle and capable of accommodating normal expected water flows.	Potable and stormwater management method statement	Throughout Construction	Daily	Site Manager
	Any runnels or erosion channels will be backfilled and compacted, and the area/s restored to a proper condition.	Intermittent Observations of erosion.	Throughout Construction	When required	Site Manager
	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 the site specifics and ensure acceptable rehabilitation.	Intermittent Observations of erosion.	Prior to Construction	Once-off	Site Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	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.	Intermittent Observations of erosion.	Throughout Construction	Throughout	Site Manager
	Where erosion and/or sedimentation occur, rectification will be carried out in accordance with details specified by the Site Manager.	Intermittent Observations of erosion.	Throughout Construction	Throughout	Site Manager
	An effort must be made to limit ponding on the surface and ensure stormwater runoff is channelled from the site. The method used will be appropriate to the expected stormwater flows and the topography and geology of the site.	Intermittent Observations of erosion.	Throughout Construction	Throughout	Site Manager
	The Contractor will be liable for any damage to downstream property caused by the diversion of overland stormwater flows.	Complaints Register	Throughout Construction	Throughout	Site Manager

15.14.5. Cement and Concrete Batching

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Cement and Concrete Batching	Concrete will not be mixed directly on the ground or any other permeable surface.	Intermittent Observations	Throughout Construction	Daily	Site Manager
	The batching / mixing area will be kept neat and clean at all times.	Intermittent Observations	Throughout Construction	Daily	Site Manager
	No batching / mixing activities will occur on a permeable surface.	Intermittent Observations	Throughout Construction	Daily	Site Manager
	All runoff from such areas will be strictly controlled, with contaminated water collected, stored / contained and disposed of at an approved waste disposal site.	Stormwater Management Method statement, Intermittent Observations, Disposal Records	Throughout Construction	Daily	Site Manager
	Unused cement bags will be stored so as not to be affected by rain / runoff.	Intermittent Observations	Throughout Construction	Daily	Site Manager
	Used cement bags will be stored so as to prevent windblown dust and potential water contamination. Used bags will be disposed of regularly via the solid waste management system detailed previously.	Intermittent Observations	Throughout Construction	Daily	Site Manager
	Concrete transportation will not result in spillage.	Intermittent Observations	Throughout Construction	Daily	Site Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	To prevent spillage onto roads, ready mix trucks will rinse off the delivery shoot into a suitable sump prior to leaving the site.	Waste Water Collection System, Intermittent Observations	Throughout Construction	Daily	Site Manager
	Suitable screening and containment will be in place to prevent windblown contamination from cement storage, mixing, loading and batching operations.	Intermittent Observations	Throughout Construction	Daily	Site Manager
	All contaminated water and fines from exposed aggregate finishes will be collected and stored in sumps for disposal at an approved waste disposal site.	Intermittent Observations, Disposal Records	Throughout Construction	Daily	Site Manager
	All visible remains of excess concrete will be physically removed on completion of the plastering or concrete pouring and disposed off in an acceptable manner.	Intermittent Observations, Disposal Records	Throughout Construction	Daily	Site Manager

15.14.6. Civil's and Structural Steelwork

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Civil's and Structural Steelwork	During placement of copper earthing, all copper off-cuts must be collected for recycling purposes.	Proof of collection from waste contractor.	Throughout Construction	Daily	Site Manager
	During construction of reinforced foundations or other reinforced concrete works, all steel cut-offs must be collected for recycling.	Proof of collection from waste contractor	Throughout Construction	Daily	Site Manager
	During steel cutting and grinding, all old discs must be managed and must not become litter.	Proof of collection from waste contractor	Throughout Construction	Daily	Site Manager
	During welding and blazing, all old welding rods must be managed and must not become litter.	Proof of collection from waste contractor	Throughout Construction	Daily	Site Manager

15.15. Geology and Soils

Primary Objective: To ensure that soils are stockpiled in the correct manner to prevent erosion and contamination of surface water runoff.

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Geology and Soils	The site and surrounding area should be shaped to permit the ready drainage of surface water and to prevent ponding.	Intermittent observations	Post Construction	Once-off	Contractor / Site Manager
	The developer and design team must ensure that the design, positioning and layout of the proposed development and construction methodologies are suitable in light of the determined nature / characteristics of the geological substrate.	Geotechnical Investigations Report	Prior to Construction	Once-off	Developer and Design Team
	The contractor must determine the correct position of the topsoil stockpile/s within the construction servitude. Dumping or storage of topsoil must not be done on established vegetation, but should remain within the servitude footprint.	Site Development Plan and Intermitted observations	Prior to Construction and During Construction	Once-off and daily	Contractor / Site Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	The position of construction related materials must be approved by the Project Manager and must ensure minimal impact to the area outside of the construction servitude.	Site Development Plan and Intermitted observations	Prior to Construction and During Construction	Once-off and daily	Project Manager / Site Manager
	Excavations and drilling must be restricted to the switching station footprint and legs/anchors of the loop-in lines.	Intermittent Observation	Prior to Construction and During Construction	Once-off and daily	Project Manager

15.16. Vegetation

Primary Objective: To ensure the control of alien invasive species and to ensure that the rehabilitation of indigenous vegetation is as close to the original state as possible.

Note:

- **The rehabilitation of vegetation refers to the actual footprint of the site, and the area of the site that has been disturbed by construction activities;**
- **The footprint is taken to include the parking areas, all formal stormwater channels, as well as the access roads, including the verges.**

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Vegetation	Vegetation Clearing shall be done in accordance with ESKASABG3 REV 0 (Standard of bush clearance and maintenance within overhead powerline servitudes) and the Vegetation Management Guideline.	ESKASABG3 and Vegetation Management Guideline	Throughout Construction	Daily	Site Manager
	No construction equipment, vehicles or unauthorised personnel will be allowed onto areas that have been rehabilitated.	Complaints register and intermittent observations and ECO to Monitor	Throughout Construction	Daily	Site Manager
	Only persons / equipment required for maintenance will be allowed to operate on rehabilitated areas.	ECO to monitor	Throughout Construction	Daily	Site Manager
	Removal of indigenous plant material from the site or surrounding and adjacent land will not be allowed. In addition the indiscriminate damage of vegetation must be avoided.	Intermittent observations	Throughout Construction	Daily	Site Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	The two protected tree species which occurs within the proposed development footprint, namely, Combretum imberbe and Sclerocarya birrea subsp caffra are protected under the National Forest Act (Act 84 of 1998) and a permit from the Department of Agriculture Forestry and Fisheries should be obtained for the removal of these trees prior to the commencement of construction activities.	Permit from the Department of Agriculture Forestry and Fisheries.	Pre-Construction	Once-off	Project Manager / ECO
	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.	Site Development Plan	Throughout Construction	Where necessary	Site Manager
	The rehabilitated and seeded areas must be harrowed after spreading the topsoil and fertilizer uniformly.	Site Development Plan	Throughout Construction	Where necessary	Site Manager
	Inspect rehabilitated area at three monthly intervals during the first and second growing season to determine the efficacy of rehabilitation measures.	ECO to monitor	Throughout Construction	Where necessary	ECO

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Take appropriate remedial action where vegetation establishment has not been successful or erosion is evident.	Intermittent observation	Throughout Construction	Where necessary	Site Manager
	Control of alien invasive species in line with the requirements of the Conservation of Agricultural Resources Act will be undertaken.	Intermittent observation	Throughout Construction	Where necessary	Site Manager / Landscaper
	Alien invasive plant material will be preferentially removed in entirety through mechanical means (e.g. chainsaw, bulldozer, hand-pulling of smaller specimens). Chemical control is only required as a last resort.	Site Development Plan and Intermittent observation	Throughout Construction	Where necessary	Site Manager / Landscaper
	All exotic trees must be identified and marked for removal.	Site Development Plan	Throughout Construction	Where necessary	Site Manager / Landscaper
	A single ingress and egress point for all workers must be used.	Site Development Plan	Throughout Construction	Where necessary	Site Manager / Landscaper
	Alien invasive plant material will not be stockpiled on site. All such material removed will be removed from the site and dumped at an approved disposal site.	Site Development Plan	Throughout Construction	Where necessary	Site Manager / Landscaper

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	All eradicated plant material must be removed from the site to an approved location, unless the landowner requests otherwise.	Site Development Plan and Intermittent observation	Throughout Construction	Where necessary	Site Manager / ECO / Landscaper / landowner
	If during the establishment period, any noxious or excessive weed growth occurs, such vegetation will be removed.	Site Development Plan and intermittent observation	Throughout Construction	Where necessary	Site Manager / Landscaper
	Only indigenous vegetation is to be used in any landscaping which may be undertaken.	Design Evaluation	Throughout Construction	Where necessary	Site Manager / ECO / Landscaper
	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.	Site Development Plan and intermittent observation	Throughout Construction	Where necessary	Developer

15.17. Fauna and Avifauna

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Fauna and Avifauna	Construction planning must be undertaken prior to construction to ensure that it does not conflict with breeding seasons.	Construction Management Plan	Pre-Construction	Once-off	Project Manager / Contractor
	Construction workers must be prohibited from interfering with stock and game animals.	Any complaints from landowners must be documented and followed up. For reports of theft a docket must be opened at the appropriate police station.	Throughout Construction	Throughout	Project Manager / Contractor
	Ensure that suitable fencing is erected prior to the commencement of construction to ensure that livestock does not wonder into dangerous areas.	Construction Management Plan	Pre-Construction	Once-off	Project Manager / Contractor
	The contractor's workforce should be very careful not to disturb any animals as disturbance may lead to fatalities which will give rise to claims from the Landowners.	Intermitted Observations	Throughout Construction	Throughout	Project Manager / Contractor

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	The contractor may under no circumstances interfere with any animal or livestock without the landowner being present. This includes the moving of livestock where they interfere with construction activities.	Intermitted Observations	Throughout Construction	Throughout	Project Manager / Contractor

15.18. Archaeology / Historical Resources

Primary Objective: To ensure that no artefacts of historical or cultural value are negatively impacted, damaged or destroyed.

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Archaeology / Historical Resources	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.	Intermittent Observations	Throughout Construction	Throughout	Contractor / Site Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Should any heritage resources be exposed during excavation or be found on site, a registered heritage specialist must be called to site for inspection and the relevant heritage resource agency must be informed about the finding.	Intermittent Observations	Throughout Construction	Throughout	Contractor / Site Manager
	Should any remains be found on site that is potentially human remains, the South African Police Service should also be contacted.	Intermittent Observations	Throughout Construction	Throughout	Contractor / Site Manager

15.19. Emergency Procedures

Primary Objective: To ensure that all contractors and employees are aware of emergency procedures should an incident occur and that the necessary emergency facilities and equipment are in working order.

15.19.1. Fire Prevention

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Fire Prevention	The contractor shall ensure that all fire control mechanisms (fire fighting equipment) are routinely inspected by a qualified investigator for efficiency thereof and be approved buy by the local fire services. Such mechanisms are present and accessible at all times.	Fire Management Plan	Throughout Construction	Throughout	Contractor / Site manager
	The contractor shall have fire-fighting equipment on all vehicles working on site, especially during the winter months.	Fire Management Plan	Throughout Construction	Throughout	Contractor / Site manager
	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 at a suitable distance from fuel sources.	Fire Management Plan	Throughout Construction	Throughout	Contractor / Site manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	In terms of NEM: Air Quality Act, burning is not permitted for waste disposal.	Fire Management Plan	Throughout Construction	Throughout	Contractor / Site manager
	Suitable precautions will be taken (e.g. suitable fire extinguishers, water bowsers, welding curtains) when working with welding or grinding equipment.	Fire Management Plan	Throughout Construction	Throughout	Contractor / Site manager
	The Fire Protection Plan should contain a detailed section on undertaking welding and grinding activities.	Fire Management Plan	Throughout Construction	Throughout	Contractor / Site manager
	Welding and grinding should not be permitted under high wind conditions.	Fire Management Plan	Throughout Construction	Throughout	Contractor / Site manager
	The site manager should be notified when welding will take place, to ensure that precautionary measures are put in place.	Fire Management Plan	Throughout Construction	Throughout	Contractor / Site manager
	Welded joints should be inspected after welding to ensure that the joint has cooled off properly, and that no smouldering material is lying around.	Fire Management Plan	Throughout Construction	Throughout	Contractor / Site manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	All fire control mechanisms (fire fighting equipment) will be routinely inspected by a qualified investigator for efficacy and be approved by local fire services. Such mechanisms will be present and accessible at all times.	Fire Management Plan	Throughout Construction	Throughout	Contractor / Site manager
	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 presence of a fire.	Fire Management Plan	Throughout Construction	Throughout	Contractor / Site manager
	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.	Fire Management Plan	Throughout Construction	Throughout	Contractor / Site manager
	The contractor will be responsible to compensate the landowner for damages caused by a fire as a result of the contractor's working activities.	Fire Management Plan	Throughout Construction	Throughout	Contractor / Site manager

15.20. Accidental Leaks and Spillages

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Accidental Leaks and Spillages	The Contractor will ensure that his employees are aware of procedures to be followed for dealing with spills and leaks, which will include notifying the relevant authorities.	Disposal Records and intermittent observation	Throughout Construction	Throughout	Contractor
	The Contractor will ensure that the necessary materials and equipment for dealing with spills and leaks are available on site at all times.	Disposal Records and intermittent observation	Throughout Construction	Throughout	Contractor
	Treatment and remediation of the spill areas will be undertaken to the reasonable satisfaction of the Site Manager in consultation with the ECO.	ECO to monitor	Throughout Construction	Throughout	Site Manager / ECO

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	In the event of a hydrocarbon spill, the source of the spillage will be isolated and contained. The area will be cordoned off and secured. The Contractor will ensure that there is always a supply of an appropriate absorbent material readily available to absorb, breakdown and where possible, encapsulate a minor hydrocarbon spillage.	Disposal Records and ECO to monitor	Throughout Construction	Throughout	Contractor

15.21. Safety and Health

Primary Objective: To ensure that the safety and health components are effectively communicated to contractors and EMPrloyees. Contractors must be aware and educated of the safety and health procedures at all times.

15.21.1. Safety Requirements / Precautions

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Safety Requirements / Precautions	Contractor to provide an Occupational Health and Safety Management Plan to the Construction Manager for approval prior to the commencement of works in terms of the Construction regulations.	Health and Safety Management Plan	Throughout Construction	Throughout	Contractor

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Ensure that there is an inspection schedule and log for use by security or contracts staff.	Intermittent observation and Health and Safety Management Plan	Throughout Construction	Throughout	Contractor / Construction Manager
	Fencing and barriers will be in place in accordance with the Occupational Health and Safety Act (Act No. 85 of 1993).	Health and Safety Management Plan	Throughout Construction	Throughout	Contractor / Construction Manager
	Applicable notice boards and hazard warning notices will be put in place and secured. Night hazards will be indicated suitably (e.g. reflectors, lighting, traffic signage).	Health and Safety Management Plan	Throughout Construction	Throughout	Contractor / Construction Manager
	Emergency and Management contact details will be prominently displayed.	Health and Safety Management Plan	Throughout Construction	Throughout	Contractor / Construction Manager
	Security personnel will be briefed and have facilities to contact relevant management and emergency personnel.	Health and Safety Management Plan	Throughout Construction	Throughout	Contractor / Construction Manager
	Security personnel must be stationed at the construction camp, construction vehicle yard, etc. during times when the construction crew is not present i.e. night, weekends, etc.	Health and Safety Management Plan	Throughout Construction	Throughout	Contractor / Construction Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	The contractor to ensure he has sufficient first aid boxes and certified first aid attendants available at the construction camp. The necessary procedures must be in place for if an employee is bitten by a snake. Prior arrangements must also be made with the local medical facilities regarding these procedures.	Health and Safety Management Plan	Throughout Construction	Throughout	Contractor / Construction Manager
	No unauthorised firearms or weapons of any kind will be permitted on the site.	Health and Safety Management Plan	Throughout Construction	Throughout	Contractor / Construction Manager
	Should scaffolding be required, it should be secured during both use and storage.	Health and Safety Management Plan	Throughout Construction	Throughout	Contractor / Construction Manager
	Structures vulnerable to high winds will be secured.	Health and Safety Management Plan	Throughout Construction	Throughout	Contractor / Construction Manager
	All landowners adjacent to the area where construction activities are imminent must be alerted timeously. Potential risks and hazards must be communicated effectively.	Health and Safety Management Plan	Throughout Construction	Throughout	Contractor / Construction Manager

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	All construction personal must be issued with the same type and colour clothing to enable better identification of them. All employees must also be issued with employee cards for landowners to identify them on.	Health and Safety Management Plan	Throughout Construction	Throughout	Contractor / Construction Manager
	Fire hazards will be identified in the Fire Protection Plan and Fire Management Plan.	Health and Safety Management Plan and Fire Management Plan	Throughout Construction	Throughout	Contractor / Construction Manager
	All workers will be supplied with the required Personal Protective Equipment as per the Occupational Health and Safety Act (Act No. 85 of 1993).	Health and Safety Management Plan	Throughout Construction	Throughout	Contractor / Construction Manager

16. Project Phase: Operation

16.1. Site Access, Routine Maintenance and Maintenance Works

Primary Objective: To ensure that the maintenance activities and maintenance works are undertaken in an acceptable manner.

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Site access	The landowner should be notified timeously of when maintenance and inspection activities will take place at the substation and loop-in lines and servitudes. The landowner should be notified at least 10 working days prior to undertaking the inspection. The relevant person from Eskom who will be undertaking the maintenance inspections should at all times be escorted by the landowner, or a representative of the landowner.	Landowner Agreement	Throughout Operational Phase	Throughout	Eskom

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	A Maintenance Inspection Agreement form should be signed by the landowner or relevant representative as proof that maintenance activities were undertaken without causing any damage to access gates, access roads, or fencing.	Landowner Agreement and EMPR	Throughout Operational Phase	Throughout	Eskom
	Should the landowner or suitable representative not be available to undertake the maintenance inspection with the Eskom representative, the landowner should in writing provide permission to the representative to undertake the inspections.	Landowner Agreement and EMPR	Throughout Operational Phase	Throughout	Eskom
	All access gates should be closed and locked as per the instruction of the landowner.	Landowner Agreement and EMPR	Throughout Operational Phase	Throughout	Eskom
	No fences may be damaged during maintenance inspections or the undertaking of maintenance work.	Landowner Agreement and EMPR	Throughout Operational Phase	Throughout	Eskom

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Should maintenance or repair work be required on site, the landowner should be notified well in advanced. Maintenance work should be undertaken as per the conditions as stipulated under the Planning and Construction Phase above.	EMPR	Throughout Operational Phase	Throughout	Eskom
	Reports of interference with electrical equipment must be treated seriously by Eskom and investigated promptly as this may be the result of arcing.	Investigation report.	Throughout Operational Phase	Throughout	Eskom

16.2. Access and Internal Routes

Primary Objective: To ensure that road maintenance and upgrade are undertaken and traffic sufficiently controlled.

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Access and Internal Roads	All roads used for maintenance inspections and maintenance works should be maintained and repaired where necessary.	Landowner Agreement	Throughout Operational Phase	Throughout	Project Manager / Contractor
	All vehicle traffic will be restricted to roadways and maintenance roads only.	EMPR	Throughout Operational Phase	Throughout	Project Manager / Contractor
	On private farm roads, maintenance vehicles may not exceed a speed of 40km/h.	EMPR	Throughout Operational Phase	Throughout	Project Manager / Contractor

16.3. Waste Management

Primary Objective: To ensure the proper management of waste.

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Waste Management	Should repair maintenance activities take place for the switching station and, its associated infrastructure or loop-in lines, waste management as described in the Planning and Construction Phases should be adhered to.	EMPR	Throughout Operational Phase	Throughout	Eskom

16.4. Delivery of Materials

Primary Objective: To ensure the proper management of delivery of materials.

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Delivery of Materials	No oil or petrol spills may occur.	EMPR	Throughout Operational Phase	Throughout	Eskom

16.5. Noise Control

Primary Objective: To ensure the effective control of noise throughout the life of the substation and associated infrastructure.

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Noise Control	Should maintenance or repair works be undertaken by Eskom, noise control measures as prescribed for the pre-construction and construction phase should be implemented.	As per the specifications / agreement between the landowner and Eskom.	Throughout Operational Phase	Throughout	Eskom

16.6. Vegetation Management

Primary Objective: To ensure the effective establishment of vegetation in the servitude area, and to control alien invasive species.

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Vegetation Management	At the end of the construction phase a vegetation monitoring and management plan should be compiled. This plan should provide details on how vegetation establishment within rehabilitated areas should be managed and how alien invasive control should be undertaken.	Vegetation Management Plan	Throughout Operational Phase	Throughout	Eskom

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Should maintenance or repair works be undertaken by Eskom, vegetation should be managed as described in the Pre-Construction and Construction Phase.	Vegetation Management Plan, and EMPR.	Throughout Operational Phase	Throughout	Eskom
	The use of herbicides should be limited, manual clearing methods should be used as far as possible. The herbicides must be mixed on an impermeable surface to the recommended dosage and applied according to the supplied instructions. Any left-over herbicide must be disposed of appropriately and not poured onto the ground or into a water body.	Vegetation Management Plan and Intermittent Observation	Throughout Operational Phase	Throughout	Eskom
	An appropriate fire management regime should be implemented and strictly controlled so as not to lead to infrastructural damage and damage of surrounding plant life. It should also be the responsibility of the Client to engage associated land-owners on proper and appropriate fire management of servitudes.	Fire Management Plan.	Throughout Operational Phase	Throughout	Eskom

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
	Cut material emanating from bush clearing should be removed from the servitude. If it is to remain within the servitude, it should not be stacked, but spread out so that it remains close to the ground. This will enhance grass growth and microbial interaction that will enhance decomposition. By spreading the cut material, the risk of damage caused from fires that burn with too much heat, which will damage natural plant life and sterilize seedbeds can be avoided.	Intermittent Observation.	Throughout Operational Phase	Throughout	Eskom

16.7. Fauna and Avifauna

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Fauna and Avifauna	Maintenance Workers and machinery to remain inside servitude areas. All labourers to be informed of disciplinary actions for the wilful damage to plants and animals.	Intermittent Observation	Throughout Operational Phase	Throughout	Eskom

16.8. Fencing

Primary Objective: To ensure protection of animals during maintenance activities.

Management Component	Core Criteria	Monitoring Criteria	Duration	Frequency	Responsible Party
Fencing	Should maintenance and repair works be undertaken, the management measures for construction and damage to fences as described in the Pre-Construction and Construction Phase should be implemented.	EMPR	Throughout Operational Phase	Throughout	Eskom

17. PROJECT PHASE: REHABILITATION AND DECOMMISSIONING PHASE

On completion of the construction activities, all areas should be rehabilitated and the Vegetation Management Plan and alien vegetation control measures should be implemented. Furthermore, should the proposed switching station be decommissioned, the following basic rehabilitation measures should be implemented. In addition to all the management measures described in the construction phase, specific rehabilitation activities are required to address decommissioning of structures, soil, land capability and vegetation establishment.

17.1. Decommissioning of Structures

- Prior to the removal of any infrastructure an assessment of the end land use will be undertaken to determine which infrastructure will be removed or retained;
- Any specific requirements to prevent pollution during demolition of infrastructure will be identified prior to the commencement of the demolition and rehabilitation activities;
- Disposal requirements will be identified prior to the commencement of infrastructure removal and rehabilitation;
- Equipment and structures that can be reused will be identified prior to the commencement of rehabilitation activities; and
- Scrap metal and equipment will be sold as scrap or disposed of at a suitably licensed facility.

17.2. Vegetation

17.2.1. Traffic on Vegetated Areas

- No construction equipment, vehicles or unauthorised personnel will be allowed onto areas that have been re-vegetated; and
- Only persons / equipment required for maintenance thereof will be allowed to operate on such areas.

17.2.2. Plant Material

- All plant material used on site will be obtained from an approved nursery;
- 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);
- The Contractor will remove plants containing any diseases and/or pests from the site;

- 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 the root systems remain moist; and
- Propagation of suitable indigenous vegetation that is quick to establish such as grasses, should be encouraged in areas where vegetation has been removed.

17.2.3. 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;
- The seedmix will be approved by the ECO prior to seeding;
- Seeds should be covered by use of an agricultural roller or similar mechanism;
- Inspect rehabilitated area at three monthly intervals during the first and second growing season to determine the efficacy of rehabilitation measures; and
- Take appropriate remedial action where vegetation establishment has not been successful or erosion is evident within the first two growing seasons.

17.2.4. Alien plant control and monitoring

- Alien plant control will be conducted as described in the operational phase for a period of two years after the rehabilitation phase is completed.

17.3. Soil and Land Capability

- All excess building material and rubble must be collected and disposed of at a suitably registered landfill site;
- Soils must be ripped to refusal or a minimum of 300mm prior to seeding;
- All areas must be profiled to tie in with adjacent terrain. Where necessary suitable soil must be imported to obtain a suitable profile;
- Suitable erosion control measures must be installed in areas where erosion may occur;
- Apply a suitable mixture of N:P:K fertiliser prior to seeding;
- Harrow the disturbed areas after spreading the topsoil and fertilizer uniformly; and
- 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.

17.4. Community Relations

- A "Complaints Register" will be kept on site, containing contact details of the complainant, as well as details pertaining to the complaint itself;

- Operations that are likely to be noisy, dusty or in some other manner disruptive will only be commenced after due notice and consultation with I&APs. This will include direct notification of the adjacent landowners, possibly through contacting the local Residents Associations or posting a notice on site, notifying residents of unusually intrusive construction activities;
- The EMPR will be made available to I&APs upon request for perusal; and
- The Project Manager will ensure actioning and responding to complaints during the construction phase.

18. CONCLUSION

The Contractor can use the Planning, Operation and Decommissioning section of this document as a standalone document. The mitigation measures contained in the Planning, Operation and Decommissioning sections address the potential negative impacts that may be associated with the project. If the suggested mitigation measures are followed then no significant impacts should remain.