

# ENVIRONMENTAL MANAGEMENT PROGRAMME

**PROPOSED CONSTRUCTION OF ESKOM 4 x 80MVA 132/88V MADIBENG  
SUBSTATION AND 2 x 8km 132kV POWER LINES  
MADIBENG LOCAL MUNICIPALITY, BOJANALA DISTRICT MUNICIPALITY,  
NORTH WEST PROVINCE**

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## ENVIRONMENTAL MANAGEMENT PROGRAMME

### 1. Introduction

According to the load flow studies done by Eskom, as well as the predicted load forecast for the area, it has become evident that the existing Lomond Distribution networks are exceeding its maximum power transfer capability. Lomond MTS (Main Transmission Substation) supplies most of the 88kV substations in the Brits Area, it is equipped with 275/88kV 2 x 315MVA transformers.

The Brits area is rapidly growing with regards to massive industrial, mining and housing developments. Existing customers are also expanding their works and these results in huge demand for power. Currently the Lomond 88kV network is experiencing under voltages and is incapable of handling additional loads due to the contingency constraints of the network. The Lomond MTS is becoming far from the points of supply with regards to voltage regulation and is due to be out of firm supply.

The proposed solution is to introduce a new 88kV source next to the Brits Industries switching station, which will be supplied from the Dinaledi MTS. It is then proposed to split the network into two, Dinaledi and Lomond accordingly.

The broader scope of works to strengthen the network therefore entails the construction of 1 New Substation, and the construction of approximately 8 km of power lines.

The total servitude width of a 132kV line without any other line around it will be 22m (i.e. 11m on each side from the centre line) and the average span length between poles will be 250m at the most.

The Environmental Assessment Practitioner (EAP), Wandima Environmental Services (Environmental Consultants) was appointed to obtain authorization in terms of Chapter 5 of the National Environmental Management Act (Act 107 of 1998) in order to proceed with the proposed construction activities listed in the EIA Regulations as published in Government Notices No's. R984 and 985 of December, 2014. As partial requirement, the services of an Environmental Control Officer (ECO) may be required to monitor compliance with the conditions set by the authorisation. For this reason the tasks and responsibilities of all role players are also included.

#### Details of EAP

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## 2. Location

The project is situated to the east of Brits and to the north east of the Brits Industrial area. Elandsrand residential area is situated to the west of the project area. The power line route will traverse several properties east of Brits towards the Dinaledi MTS (Main Transmission Substation) in Madibeng Local Municipality, Bojanala District Municipality in the North West Province.

## 3. Activity

On 04 December 2014, the Department of Environmental Affairs (DEA) promulgated the new EIA regulations that must be adhered to in terms of Sections 24(2) (a) and 24(d) of the NEMA (1998). Activities that are triggered by the proposed development are listed as follows:

### **Listing Notice 1, R983 of December, 2014:**

**Activity No 2 (ii):** The development and related operation of facilities or infrastructure for the generation of electricity from a non-renewable resource where-

(ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare.

*Construction of the new proposed 4 x 80MVA 132/88V Madibeng Substation on a site of 100m x 150m adjacent to the existing Brits Industries Switching Station.*

### **Listing Notice 1, R983 of December, 2014:**

**Activity No 11 (i):** The development of facilities or infrastructure for the transmission and distribution of electricity – Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts

*Construction of 2 x 8km 132kV Twin Bersfort power lines from the existing Dinaledi MTS Substation to the new proposed Madibeng Substation.*

### **Listing Notice 3, R985 of December, 2014**

**Activity No 3(e) (ii):** The development of masts or towers of any material or type used for telecommunication, broadcasting or radio transmission purposes where the mast or tower is to be placed on a site not previously used for this purpose; and will exceed 15 meters in height.

Construction of a 36 meter Communication Tower inside the new substation.

### **Listing Notice 3, R985 of December, 2014**

**Activity No 4(e)(ii)(aa):** The development of a road wider than 4 metres with a reserve less than 13.5 metres in urban areas in a an area zoned for use as public open space.

*Construction of an access road for the new substation.*

## 4. Terms of Reference

Wandima Environmental Services were appointed by the applicant to compile the EMPr and submit it to the competent authority as condition of the general authorization.

The applicant is responsible for compliance with the provisions for Duty of Care and Remediation of Environmental Damage contained in Section 28 of the National Environmental Management Act (Act 107 of 1998).

## 5. Objectives

The Environmental Management Programme (EMPr) will form the basic tool for reducing the magnitude of impacts and suggesting practical measures to attain this. It is also used to measure compliance by the applicant. It is this tool that gives guidance during monitoring, auditing and taking corrective actions during its implementation, thereby ensuring continuous monitoring of the environment. An EMPr is developed after an environmental assessment, depending on the level of such assessment. It can also be drawn after the authorisation by the environmental authority, to incorporate the conditions of the authorization to reach environmental and social sustainability during project implementation and operation.

## 6. Key sustainability principles emphasized include:

- Development must not irreversibly degrade the natural, built, socio-economic and governance resources on which it is based.
- Current actions should not cause irreversible damage to natural and other resources, as this potentially prevents the realisation of future sustainable options.
- Where there is uncertainty about the impact of activities on the environment, caution should be in favour of the environment.
- Land use and environmental planning need to be integrated.
- Immediate and long-term actions need to be identified and planned for, so that urgent needs can be met while still progressing towards longer-term sustainable solutions.

An EMPr is implemented throughout the project life-cycle, i.e. during pre-construction, construction, operation and decommissioning, in order to minimize negative impacts and enhance positive ones. An effective EMPr will be a practical working document that sets out the requirements and the goals required in mitigation. The main terms of the EMPr will be detailed to achieve the following:

- To define measures to be taken during pre-construction, construction, and operation and decommissioning/closure;
- To define the actions needed to implement those measures;
- To describe how these will be achieved;
- To allocate responsibilities;
- To provide time frames.

## 7. Implementation Responsibilities of the EMPr

### 7.1 The Applicant

The applicant (Eskom Distribution) is responsible for ensuring that the activity is implemented according to the requirements of the EMPr. The applicant must ensure that relevant professionals are appointed to perform functions as required by the authorities and legislation. The applicant will have the following responsibilities:

- To ensure there is sufficient allocation of resources to the professional role players to perform their tasks in terms of the EMPr;
- In event that the Environment is negatively affected, the applicant will be responsible for rehabilitation and restoring the affected areas to an acceptable level;
- The applicant must include the EMPr with all tender and contractual documents in order to ensure that all parties involved are bound to the terms of the EMPr;
- The applicant must provide the contractor with a copy of the EMPr and any other relevant documentation or supporting documents.

### 7.2 The Contractor

The contractor is bound to the terms and conditions of the EMPr by way of the contract with the applicant. The contractor must be familiar with the terms of the EMPr before commencement of the activities on site and must request clarification on any issues that are unclear. The main responsibilities of the contractor are as follows:

- The contractor must comply with all the terms and conditions of the EMPr and must ensure that all sub contractors are initiated with the EMPr and comply with the terms of the EMPr;
- The contractor must attend a site inspection and orientation session with the ECO to identify and be informed of the sensitive elements of the site and take cognizance of the boundaries of the construction area. The ECO must point out any particular site-specific elements of importance;
- The contractor must ensure that the construction crew attends an environmental briefing and training session presented by the ECO prior to commencing activities on site;

- The contractor must adhere to all verbal all written orders given by the Environmental Control Officer (ECO) or other responsible persons (project manager or site engineer) in terms of the EMPr.

### **7.3 Services and Duties of the Environment Compliance Officer (ECO)**

The Environmental Control Officer (ECO) is an independent person, appointed by the applicant, who must monitor compliance with the environmental management programme. The main responsibilities and duties of the ECO are as follows:

- The priority of the ECO is to ensure that the site environment is not negatively affected by the proposed activities and that minimal environmental damage is done during construction and adequate measures are implemented to ensure that future operations and maintenance does not significantly impact on the environment
- The ECO will oversee the environmental aspects of the development and ensure compliance with the EMPr
- The ECO shall liaise with relevant authorities and keep records of all correspondence with external interested and affected parties
- To ensure that the proponent, construction team, the operational and maintenance workers are acquainted with their responsibilities
- To ensure compliance with regulatory authorities requirements
- To respond to changes in the project implementation not considered during the assessment phase, and respond to unforeseen events
- To verify environmental performance through information on impacts as they occur
- To establish proper communication channels and provide feedback for continual improvement.

### **7.4 Mandate and Reporting Duties of the ECO**

One of the main responsibilities of the ECO is reporting to the competent authority which will be in form of monthly audit reports. These reports will consist of descriptions of the general state of the site and will include specific reference to non-compliance and corrective measures to address non-compliance and significant impacts. Site inspections will therefore form the basis for the ECO to compile these reports. In order to perform these duties efficiently, the ECO has the right:

- To enter the site and undertake monitoring and auditing at all times;
- To appoint the necessary specialists in order to monitor- or take corrective measures to address significant impacts.

An Environmental Log sheet will be kept to keep record of any non-compliance, incidents and impacts that have significant impacts on the environment.

### **7.5 Liaising duties of the ECO**

In order to fulfil his/her duties the ECO will have to participate at all levels of the project. An integral part of this will be liaising with the following institutions/persons:

- Competent and relevant authorities;
- The applicant and contractor;
- All external Interested and Affected Parties;

### **7.6 Appointment duties of the ECO**

The EMPr as compiled by the Environmental Consultant will be used by the ECO as basis for environmental monitoring and compliance auditing. These duties are termed as follows in the EMPr:

- The ECO will identify sensitive habitats and individual plant species that must not be damaged during construction and clearly demarcate these plants and habitats with danger tape or fencing;
- The contractor must attend a site inspection with the ECO to be orientated with the sensitive aspects of the site and take cognizance of the boundaries of the construction area. The ECO must point out any site-specific aspects of importance on the site;

- The ECO must form part of the project management team and form part of decision making relevant to the environment;
- The ECO shall liaise with relevant authorities and keep record of all correspondence with external interested and affected parties;
- The ECO must monitor the emergence alien/invasive species and weeds on a monthly basis. If such species are recorded, the ECO must instruct the responsible person to remove or control these species according to the most effective methods as given in relevant literature;
- The ECO must arrange an environmental briefing and training session with the contractor and his crew prior to commencement of construction activities.

## 7.7 Environmental Incidents

In order for the EMPr to be efficient in case of any environmental incidents, the following criteria should be adhered to:

- In event of a significant environmental incident occurring the contractor must notify the ECO and/or the authorities within 24 hours of occurrence;
- Investigate the cause of the incident and compile an environmental incident report;
- Take corrective measures to mitigate the incident;
- Rehabilitate any residual damage to the environment;
- Introduce alternative operating procedures and/or technology to prevent a recurrence of the incident.

## 8. Constraints and Availability of Resources

The relevant basic documentation (including copies of the Authorisation and EMPr) as well as correspondence must be made available to the ECO in order to compile the necessary documentation for the environmental monitoring. Any constraints should be recorded.

## 9. Legal Requirements

Legislation and guidelines that will be considered during the Environmental Monitoring process are as follows:

- Constitution of the Republic of South Africa (No. 108, 1996)
- Environmental Impact Assessment Regulations, 2014
- National Water Act (No. 36, 1998)
- National Environmental Management: Biodiversity Act (No. 10, 2004)
- Labour Relations Act 66-1995
- National Environment Conservation Act (No 73, 1989)
- National Roads Act (No. 7, 1998)
- National Heritage Resources Act (No. 25, 1999)
- Occupational Health and Safety Act (No. 85, 1993)
- Promotion of Access to Information Act (No. 2, 2000)
- National Environment Management: Waste Act, 2008 (No 59 of 2008)
- Electricity Regulation Act (No. 4, 2006) National Environment Management: Waste Act, 2008 (No 59 of 2008)
- EIA regulations as listed in Government Notices R983 and R985 (04 December 2014)

## 10. Summary / Mitigation Plan-Table

The EMPr and authorization should be used as legal documents as well as the environmental auditing format.

The EMPr for this project is included with Tables 1-10. These tables list the key activities and relate these activities with resulting environmental impacts identified during the EIA process as well as the conditions included with the authorization granted by the competent authority. Mitigation measures are also included with the aim of reducing the magnitude of negative impacts and to enhance potential positive impacts.

**Table 1: Managing of Impacts on Soil**

Relevant Activities		<ul style="list-style-type: none"> <li>▪ Construction of services infrastructure;</li> <li>▪ Construction camp; Personnel discipline;</li> <li>▪ Materials Stockpiles.</li> </ul>			
Environmental Statement					
EMP Ref:	Environmental Impact/Aspect	Mitigation	Phase	Monitoring	Responsibility
T1.1	Degrading of soil structure	a) Before construction, vegetation and topsoil must be stripped and stockpiled separately to prevent removal and compaction by vehicles. It must be used for future rehabilitation purposes. b) During construction of the substation, topsoil shall be stockpiled in heaps not exceeding 2.0m in height and be protected from erosion. c) Re-usable subsoil stripped from construction sites must be stockpiled separately and clearly identified as such. d) During construction of the substation and powerlines, soil must not be stockpiled on drainage lines or near watercourses. e) Deficiency of backfill material will not be made up by excavation within the remainder of the development area or private properties. Where backfill material is deficient, it must be made up by importation from an approved borrow pit.	Construction	Weekly	Contractor ECO
T1.2	Soil Erosion	a) Appropriate soil erosion and control procedures must be applied to all embankments that are disturbed and destabilized. b) Occurrence of erosion has to be monitored during construction and operational phases and corrective measures and aftercare processes be undertaken if necessary.	Construction and Operational	Weekly Monthly	Contractor ECO
T1.3	Pollution of soil	a) Avoid contamination of soil with oil, grease, diesel, petrol, waste or any other foreign matter, which may impact on the capability of the soil as a growth medium. b) All equipment to be inspected daily for oil or fuel leaks before it is operated. Leakages must be repaired on mobile equipment or containment trays placed underneath immobile equipment until such leakages have been repaired. c) Surfaces where plant/equipment is stored/parked should be paved with a reinforced concrete slab with 200mm elevated edges. d) Contaminated soil has to be: <ul style="list-style-type: none"> <li>○ Removed up to depth 300mm below the saturation mark;</li> <li>○ Disposed at permitted landfill site.</li> </ul>	Construction	Continuous	Contractor ECO

**Table 2: Managing of Construction Impacts and General Environmental Pollution**

Relevant Activities		<ul style="list-style-type: none"> <li>▪ Construction of services infrastructure;</li> <li>▪ Construction camp: Personnel discipline;</li> <li>▪ Materials Stockpiles.</li> </ul>			
Environmental Statement					
EMP Ref:	Environmental Impact/Aspect	Mitigation	Phase	Monitoring	Responsibility
T2.1	Construction disturbances and waste disposal	<ul style="list-style-type: none"> <li>a) Construction methods must be respectful of the environment – no unnecessary vegetation clearing, excavations or untidiness.</li> <li>b) Concrete mixing will be done on pre-designed slabs underlined by PVC lining, on an area previously disturbed. Alternatively, maintain one mixing site and transport the concrete to the construction site.</li> <li>c) Any concrete spillage must be cleaned immediately.</li> <li>d) Littering on site and the surroundings areas is prohibited. Clearly marked litterbins must be provided on site. The contractor's representative must monitor the presence of litter on the work sites as well as the construction campsite. All bins must be cleaned.</li> <li>e) Waste must be disposed, as soon as possible and not be allowed to stand on to decay, resulting in bad odours and attracting vermin.</li> <li>f) All waste removed from site must be disposed at the municipal/permitted waste disposal site.</li> <li>g) The contractor must ensure that all temporary structures, materials, waste and facilities used for construction activities are removed upon completion of the project.</li> <li>h) The contractor must clean up and restore all disturbed areas and implement rehabilitation measures as required by ECO.</li> </ul>	Construction	Weekly	Contractor
T2.2	Air pollution & Generation of Dust	<ul style="list-style-type: none"> <li>a) Speed limit must be enforced in all areas to limit the levels of dust pollution and noise.</li> <li>b) Air pollution caused during construction can be limited by using dust suppression methods such as water spraying. Water used for this purpose must be in quantities that will not result in the generation of run-off.</li> <li>c) The contractor's representative or environmental officer must notify all people living within 100m of the construction site of proposed activities.</li> <li>d) In the event of serious levels of dust pollution, the implementation of constant dust monitoring by qualified consultants must be undertaken.</li> <li>e) Vehicles used on, or entering the site must be serviced regularly to ensure that they do not emit excessive smoke or fumes.</li> <li>f) No refuse waste is to be burned on the premises or on surrounding premises.</li> </ul>	Construction	Daily	Contractor
T2.3	Noise pollution	<ul style="list-style-type: none"> <li>a) Noise control measures must be implemented. All noise levels must be controlled at the source.</li> <li>b) All employees must be given the necessary ear protection gear if the noise levels exceed 70dB.</li> <li>c) Interested &amp; Affected Parties must be informed about impending excessive noise.</li> <li>d) Generators and pumps must be housed in casings to help reduce any noises in operation.</li> <li>e) No loud music or excessive noise generated by employees is allowed on site and in construction camps.</li> </ul>	Construction	Daily	Contractor



**Table 3: Managing of Impacts on Biodiversity**

Relevant Activities		<ul style="list-style-type: none"> <li>▪ Construction of roads, services infrastructure, dwellings;</li> <li>▪ Site selection;</li> <li>▪ Personnel discipline.</li> </ul>	Environmental Statement		
EMP Ref:	Environmental Impact/Aspect	Mitigation	Phase	Monitoring	Responsibility
T3.1	All aspects	a) The mitigations and recommendations submitted in the Biodiversity Reports (as part of the specialist studies for the BA) must be included as an addendum to the EMPr and adhered to where so required by the authority.	All phases		Contractor ECO Applicant
T3.2	Loss of Vegetation and Habitat	a) Vegetation clearance must be kept to a minimum b) Construction must be respectful of the environment and must be confined to pre-selected sites.	Planning Construction	Monthly	ECO Contractor
T3.3	Death and Injury of animals	a) Avoid injury to or death of wild animals by reducing speed of construction vehicles. b) Holes must be inspected daily to monitor for trapped animals or be covered after hours.	Construction	Daily	Contractor ECO
T3.4	Death and injury to avifauna	a) Placement of pylons must be positioned to minimise impacts on birds. b) Bird flight diverters to be installed at appropriate positions. c) Bird perches to be installed where necessary. d) Contractor and staff to be made aware of sensitive areas. e) Contractor to make sure no poaching of birds takes place. f) Construction work to be confined to servitude. g) Existing and farm roads must be used as much as possible during construction h) Bird flappers (or equivalent) to fitted at appropriate. i) A monitoring programme must be established to monitor collisions. j) Ongoing monitoring must undertaken along sensitive areas such as river crossings, riparian areas, valley areas) for incidents of bird collisions.	Planning  Construction  Operation	Once off  Daily  Daily	Contractor  Contractor  Applicant
T3.5	Illegal Removal of vegetation	a) Any evidence of plant theft (especially protected species – cycads and other listed species) must be followed up with prosecution and penalties levied on the construction company. b) Construction teams will not, as a contractual obligation, be allowed to collect firewood or any other plant resources from surrounding vegetation, notably outcrops and riparian areas. Any evidence of this must be followed up with prosecution and penalties levied on the construction company.	Construction	Daily	Contractor ECO
T3.6	Protected species	a) Prior to vegetation clearing, the development footprint must be surveyed for plant species of conservation concern. b) Protected plants occurring within the footprint should be relocated in consultation with an approved specialist after obtaining the necessary permits from authorities. c) All protected species occurring within the footprint should be clearly marked for the duration of the construction phase, and should remain intact and undisturbed. If this is unavoidable, the contractor must follow procedures as advised by the ECO. d) Important flora that may become apparent at a later stage should be reported to a specialist and the authorities and be relocated or conserved.	Planning Construction	Monthly	ECO Contractor
T3.7	Spreading of weeds	a) Where alien invasive plants occur they must be uprooted, cut and /or chemically treated. (Use only approved chemicals).	Construction Operational	Weekly Monthly	ECO Contractor
T3.8	Management of fauna	a) No wild animal may under any circumstance be handled, removed or be interfered with. b) No wild animal may be fed on site. c) If applicable, regularly undertake checks of the surrounding natural vegetation, in fences and along game paths to ensure that no traps have been set. Remove and dispose of any snares or traps found on or adjacent to the site or report such encounters to Nature Conservation Officials for possible investigations. d) Problem animals and vermin need to be removed by an appropriate organization or authority (i.e. such as the Parks Board, the SPCA or a registered exterminator). e) Do not make use of any pesticides, unless approved by the Project Management Team. f) Important flora that may become apparent at a later stage should be reported to a specialist and the authorities and be relocated or conserved.	Construction Operational	Daily	Contractor ECO Owner

**Table 4: Managing of Impacts on Surface and Groundwater**

Relevant Activities		<ul style="list-style-type: none"> <li>▪ Construction of services infrastructure;</li> <li>▪ Construction camp;</li> <li>▪ Materials Stockpiles;</li> <li>▪ Personnel discipline.</li> </ul>			
Environmental Statement					
EMP Ref:	Environmental Impact/Aspect	Mitigation	Phase	Monitoring	Responsibility
T4.1	Impact on Water quality	a) Adequate sedimentation control measures must be instituted at any prominent drainage lines, water crossings and construction trenches. b) Where possible construction activities must be positioned away from storm water drainage lines and areas with a perched water tables. c) All fuel, chemicals, oil, etc. must be confined to areas where the drainage of water can be controlled. Use appropriate structures and methods for storage and handling. d) No dumping of foreign material in streams, rivers and/or wetland areas is allowed. e) No washing and or cleaning of clothes, eating utensils, tools or equipment allowed in water bodies. f) Adequate sanitation for all personnel to be supplied on site. g) No permanent stockpiling of any kind allowed within the 1:100 year flood line or within 30m of any water courses.	Construction	Weekly	Contractor
T4.2	Impact on surface water courses	a) Occurrence of erosion and silt generation has to be monitored during operational phase and corrective measures taken if necessary.	Operational	Yearly	ECO Applicant

**Table 5: Managing Visual Impacts**

Relevant Activities		<ul style="list-style-type: none"> <li>▪ Visual impacts</li> </ul>			
Environmental Statement					
EMP Ref:	Environmental Impact/Aspect	Mitigation	Phase	Monitoring	Responsibility
T5.1	Planning & Design	a) Alignment of structures should be compatible with the natural contours. b) Built structures should, as far as is practicable, not break the horizon. c) Where possible, provide a 1km buffer area between the distribution line and sensitive visual receptors. d) Make use of existing access roads where possible e) Make use of existing servitudes as far as possible.	Planning		Applicant
T5.2	Construction aspects	a) Construction of the distribution line should take place during the off-peak tourism season. b) The contractor must ensure that the site is kept tidy at all times, that sufficient refuse bins are provided, and that they are emptied regularly. c) Disturbed and open areas must be rehabilitated and re-vegetated as soon as possible after construction.	Construction	Daily	Contractor ECO
T5.3	Operational aspects	a) Rehabilitate all disturbed areas. b) Service roads should be maintained and inspected regularly.	Operational	Quarterly	Applicant

**Table 6: Managing of Fire Hazards, Safety and Security**

Relevant Activities		<ul style="list-style-type: none"> <li>▪ Construction camps</li> <li>▪ Personnel discipline</li> <li>▪ Security</li> <li>▪ Safety</li> </ul>			
Environmental Statement					
EMP Ref:	Environmental Impact/Aspect	Mitigation	Phase	Monitoring	Responsibility
T6.1	Fire precautions	a) Take adequate precautions to ensure that fires are not started as a result of Works on site: the Contractor will be held liable for any damage to property adjoining the Site as a result of any fire caused by one of his employees or machinery. b) Establish and maintain fire breaks around the Work Sites as and when specified by the Project Management Team and as required by applicable legislation and the local authority. c) Do not permit any fires or open flames in the vicinity of a wetland, especially during the dry season. A minimum requirement for construction in a high fire risk area is a water truck or cart, with a minimum capacity of 5000 litres, equipped with pump and hose (minimum length 30m), which must be permanently on site. d) Ensure that the Work Site, the contractor's camp and all living quarters if established are equipped with adequate fire fighting equipment. This includes at least rubber beaters when working in veld areas, and at least one fire extinguisher of the appropriate type irrespective of the site. All vehicles on site should be equipped with fire fighting equipment (Dry Chemical). e) Take immediate steps to extinguish any fire, which may break out on the construction site. f) No open fires are permitted on site, except in designated cooking area where adequate precautions need to be taken to prevent the spread of fire. Restrict contained fires for heating and cooking (i.e. in a fire drum) to designated areas on site. Prevent employees from creating fires randomly outside designated areas.	Planning & Construction	Daily	Contractor
T6.2	Security	a) The contractor's representative or environmental officer must inform all adjacent landowners/farm-owner of any after-hour construction activities and any other activity that could cause a nuisance. Normal working hours are between 07h00 and 17h00 Monday to Friday. Arrangements are to be made with the Local Authority for after-hours work. b) Staff members residing in the construction camp will not be allowed to cause a nuisance to any neighbouring homesteads or dwellings. In the event of a complaint received from the adjacent land owners, the privilege to reside on the property will be cancelled immediately. c) No random cooking fires are to be allowed on construction sites except designated cooking areas.	Construction	Daily	Contractor
T6.3	Safety	a) Best practice methods must always be employed and appropriate regulations adhere to. b) No open trenches are permitted without the use of demarcation tape. c) Speed limits must be enforced in all areas, including public roads and private property to avoid potential accidents. d) There must be a First Aid Kit onsite. e) Regular auditing of safety requirements must be undertaken in order to monitor and control the problems before they become unmanageable. f) Workers rights to refuse work in unsafe conditions must be respected. g) A record must be kept of all incidents on site. h) Personnel must be trained in basic site safety procedures. i) Secure storage of materials on site particularly hazardous material e.g. chemicals and fuels. j) Adequate signage on and off the site about potential hazards must be provided. k) Controlled accesses will be constructed to manage the movement of vehicles and public in and out of the power line construction site. l) Appropriate notification signs must be erected along the power line route warning the public of the dangers around the construction site. m) Members of the general public must not be allowed near the construction site.	Construction	Daily	Contractor ECO

		<p>n) Necessary precautions must be taken at all times to safeguard the public and traffic while installation operations are in progress within residential areas and within the road reserve or road crossing.</p> <p>o) Do not store any fuel or chemicals under trees.</p> <p>p) Do not permit any smoking within 3m of any fuel or chemical storage area, or refuelling area.</p> <p>q) The contractor must keep a First Aid kit and the telephone numbers of local emergency services in prominent positions at the staff quarters and the site office. All personnel must be made aware of these locations. Team leaders should undergo training in First Aid.</p> <p>r) The contractor on site during the construction phase must provide safety and security arrangements that should ensure that:</p> <ul style="list-style-type: none"> <li>o The handling of equipment and material is supervised:</li> <li>o Construction vehicles are maintained and controlled by competent personnel</li> <li>o All excavated areas are clearly marked and that barrier tape is placed around them</li> </ul>			
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**Table 7: Managing of Construction Camp/Personnel**

<b>Relevant Activities</b>		<ul style="list-style-type: none"> <li>▪ Construction camps</li> <li>▪ Personnel discipline</li> <li>▪ Security</li> <li>▪ Safety</li> </ul>			
<b>Environmental Statement</b>					
<b>EMP Ref:</b>	<b>Environmental Impact/Aspect</b>	<b>Mitigation</b>	<b>Phase</b>	<b>Monitoring</b>	<b>Responsibility</b>
T7.1	Social disturbances	<p>a) Prior to establishing the construction camp, if applicable, the contractor shall produce a plan showing the positions of all structures, lay-down yards and other infrastructure for approval by the ECO.</p> <p>b) Fires will only be allowed in facilities or equipment specially constructed for this purpose. If required by applicable legislation, a firebreak shall be cleared around the perimeter of the camp, storage facility and office sites.</p> <p>c) Construction &amp; maintenance activities must be of such a nature as not to disturb the livelihood of adjacent property owners.</p> <p>d) A designated place for food preparation and eating must be established at the construction site.</p> <p>e) Dry chemical toilets must be made available at a ration of 1 toilet per 10 staff, within the campsite and construction site perimeter and must be cleaned and serviced as requested by the service provider.</p> <p>f) Workers movements must be limited to the construction area only and must be enforced in terms of the contracts of appointment.</p> <p>g) Any complaints must be addressed with the Community Liaison Officer and Site Manager accordingly and a record must be kept thereof.</p> <p>h) The applicant must ensure that measures are in place to prevent/mitigate disruption of services as result of construction.</p> <p>i) Residents have to be notified 7 days in advance of disruptions to services.</p>	Construction	Daily	Contractor ECO

**Table 8: Site Clean-Up and Rehabilitation**

Relevant Activities		<ul style="list-style-type: none"> <li>Lack or delay of rehabilitation may negatively impact on the aesthetic nature of the area and also cause long-term environmental damage.</li> </ul>			
Environmental Statement					
Ref:	Environmental Impact/Aspect	Mitigation	Phase	Monitoring	Responsibility
T8.1	Rehabilitation of environmental damage	a) The Environmental Control Officer must ensure that all temporary structures, materials, waste and facilities used for construction activities are removed upon completion of the project. b) Upon completion of the construction period, the ECO will ensure that any/all temporary access roads are returned to a state no worse than prior to construction commencing. c) Once heavy machinery has cleared the bulk of these material stockpiles, the disturbed areas will be levelled and cleared of any foreign material manually. d) Fully rehabilitate all disturbed areas and protect them from erosion by propagating vegetation through reseeding with local plant and grass species. e) Slopes must be designed according to predefined specifications, aimed at the prevention of soil erosion, of efficient storm water control, of the eventual re-establishment of vegetation and of ultimately achieving aesthetically acceptable landscapes. f) In general, no slopes steeper than 1:3(V:H) must be allowed. g) Cut slopes must not be steeper than 1:2(V:H) and rounded off on the top edge. h) Bulk and fine shaping must be executed according to design, aimed at the prevention of soil erosion, efficient storm water control, the eventual re-establishment of vegetation and ultimately achieving aesthetically acceptable landscapes. i) On all man-made slopes, the following rehabilitation methods must be applied: <ul style="list-style-type: none"> <li>Replacing and redistribution of stripped topsoil to a minimum depth of 200 mm.</li> <li>Ripping at 300 mm but not more than 400 mm apart and parallel to contours, through the placed topsoil, to a depth of 100 mm at least, into the sub base soil below.</li> <li>Sowing of specified grass seed mixture and fertilizer, if required.</li> </ul>	Post-construction	Post-Construction	Contractor ECO
T8.2	Compliance	a) ECO to audit rehabilitation.	Post-construction	Once	ECO

**Table 9: Managing of heritage sites and socio-economic issues**

<b>Relevant Activities</b>		<ul style="list-style-type: none"> <li>▪ Heritage sites;</li> <li>▪ Social;</li> <li>▪ Economic</li> </ul>		
<b>Environmental Statement</b>				
<b>EMP Ref:</b>	<b>Environmental Impact/Aspect</b>	<b>Mitigation</b>	<b>Phase</b>	<b>Responsibility</b>
T9.1	Heritage sites	a) Work in areas where artefacts are found must cease immediately. The excavation must be examined by an archaeologist as soon as possible.	All phases	Applicant
T9.2	Socio-Economic	a) Local residents are to benefit from employment opportunities.	All phases	Applicant Contractor

**Table 10: Compliance with conditions of the authorisation and monitoring**

<b>Relevant Activities</b>		<ul style="list-style-type: none"> <li>▪ All Aspects of EMPr</li> <li>▪ Compliance</li> <li>▪ Monitoring</li> </ul>		
<b>Environmental Statement</b>				
<b>EMP Ref:</b>	<b>Environmental Impact/Aspect</b>	<b>Mitigation</b>	<b>Phase</b>	<b>Responsibility</b>
T10.1	Compliance to EMPr and authorisation	a) ECO to be employed in order to initiate the applicant and contractor as well as personnel on the subject of the EMPr and authorisation and compliance thereto.	Planning	ECO
T10.2	Monitoring	a) Monitoring for any environmental impacts during the operational phase is recommended until a satisfactory standard of compliance is attained.	Construction Operational	Applicant ECO