**Eskom Vrede-Tembalihle 11kV Line Project**

**Environmental Management Programme (EMP)**

**August 2015**

**Compiled by:**

**Landscape Dynamics Environmental Consultants**

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**Applicant :**

**Eskom Holdings SOC Ltd, Free State Operating Unit**

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**I. OBJECTIVES OF THE ENVIRONMENTAL MANAGEMENT PLAN (EMP)**

The Environmental Management Plan has the following objectives:

* To state the standards and guidelines which ESKOM will be required to adhere to in terms of environmental legislation;
* To set out the mitigation measures and environmental specifications which ESKOM will be required to implement for the construction phase of the project in order to minimize the extent of environmental impacts, and where possible to improve the condition of the environment;
* To provide guidance regarding the method statements which ESKOM will be required to compile and implement to achieve the environmental specification;
* To define corrective actions which ESKOM must take in the event of non-compliance with the specifications of this EMP;
* To mitigate potential negative impact associated with the project and ensure optimising of positive impact
* To prevent long-term or permanent environmental degradation;
* To ensure that the applicant, construction workers and the operational and maintenance staff are well acquainted with their responsibilities in terms of the environment;
* To ensure that communication channels to report on environment related issues are in place.

**II. DETAILS OF THE PERSON WHO PREPARED THE EMP**

This Environmental Management Plan was prepared by Landscape Dynamics cc, an environmental consultancy firm, established in May 1997. Their core business involves the execution of Environmental Impact Assessments that include the compilation of Environmental Management Plans for all of these projects. The team members responsible for this project and the compilation of the EMP are Annelize Grobler and Susanna Nel. A Company Profile and Curriculum vitae’s are available on request from [info@landscapedynamics.co.za](mailto:info@landscapedynamics.co.za)

**III. DETAILS OF THE PROPOSED ACTIVITY**

The applicant is Eskom SOC Limited, represented by Eskom Distribution Free State Operating Unit. The project name is the Eskom Vrede Municipality-Tembalihle 11kV Power Line. The proposed powerline will traverse the Spruitsonderdrift River which is located north and northwest of the town of Vrede in the Freestate Province. The Spruitsonderdrift River forms part of the Upper Vaal Water Catchment Area within the jurisdiction of the Gauteng Regional Office of the Department of Water & Sanitation.

The line is approximately 700m in length and will be constructed in a servitude of 18m (9m on each side of the centre line), or else with a separation distance of 12 metres between parallel lines.



Method Statement

The powerline will consist of wooden monopoles for which no concrete foundations are required. Construction will involve the use of a drill connected on a truck that removes a soil core of 1,8m whereafter the pole will be placed and stabilised with infill material (i.e. the soil that had been taken out).

**IV LEGAL REQUIREMENT**

National Environmental Management Act, 1998 (Act No. 107 of 1998)

The Environmental Impact Assessment Regulations promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), have reference. Government Notices No. R. 983, 984 and 985 published in December 2014 are applicable. No listed activity for environmental authorization is applicable to this project.

National Water Act, 1998 (Act Nr 36 of 1998)

It was confirmed with the Department of Water and Sanitation, Directorate Instream Water Use (Reference Mr Piet Ackermann, tel 012 336 8217) that Water Use Authorisation is not applicable on condition that this Environmental Management Plan be compiled with a few specific requirements and be implemented.

If for any reason the requirements in this document cannot be met, a Water Use License Application will be required for the following activities :

• Item 21(c )Impeding or diverting the flow of water in a watercourse

• Item 21(i) Altering the bed, banks, course or characteristics of a watercourse

The contact details of the relevant officials are :

The Gauteng Regional Office, care of Ms Flora Mamabolo - 'MamaboloF@dws.gov.za' or Ms Alexia Hlengani Hlengani Alexia (GAU) - [HlenganiA@dws.gov.za](mailto:HlenganiA@dws.gov.za) and in addition Mr Piet Ackerman of the Directorate Instream Water Use - [AckermanP@dws.gov.za](mailto:AckermanP@dws.gov.za)

The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)

Note should be taken of the Alien and Invasive Species Regulations, 1 August 2014 (GNR 598) which requires that all alien and/or invader plants declared as invaders/weeds, in accordance with the regulations, must be removed.

**V. DETAILS OF PERSONS RESPONSIBLE FOR IMPLEMENTATION OF EMP**

The following undertaking must be filled out and signed by the applicant and forwarded to DEA prior to commencement of construction:

AGREEMENT & UNDERTAKING OF THE APPLICANT

I hereby confirm and state that I am aware of the contents of the Environmental Management Plan and the conditions of the Environmental Management Plan and shall comply with all legislation pertaining to the nature of the work to be done and all things accidental thereto.

Signed on behalf of

Date:

Place:

Signature:

Full Name:

Postal Address: \_\_\_\_\_\_

Physical Address:

Office Telephone Number:

AGREEMENT & UNDERTAKING OF THE ECO

The following details of the ECO must be filled out, signed and forwarded to DEA prior to construction:

Company Name:

Contact Person(s):

Physical Address:

Street Address:

Office Telephone Number:

Cell phone Number:

Fax Number:

**V. PROPOSED MECHANISM FOR COMPLIANCE**

Key impacts generally associated with ESKOM construction activities for this project are:

* Impact on natural habitat
* Impact on birds
* Impact on cultural heritage resources
* Risk of surface and groundwater pollution
* Risk of erosion
* Community Impact

Specifications and conditions are hereby provided to limit and/or prevent impact on these components during all the phases of project development, namely

1. Specifications applicable throughout all Phases of Project Development
2. Design & Pre-construction Phase
3. Construction Phase
4. Post-construction & Operational Phase

**SPECIFICATIONS APPLICABLE THROUGHOUT ALL PHASES OF PROJECT DEVELOPMENT**

**Roles and Responsibilities**

**ESKOM**

ESKOM is the applicant for the project. ESKOM will therefore be the entity monitoring the implementation of the EMP. The Contractor whom the construction tender will be awarded to (or it could also be an in-house Eskom Contractor) will be responsible to implement the proposed mitigation measures in this EMP on ESKOM’S behalf. ESKOM will:

* Be responsible for the overall implementation of the EMP in accordance with the requirements of the environmental authorisation, issues by DEA.
* Ensure that all third parties who carry out all or part of ESKOM’S obligations under the contract and tender documentation comply with the requirements of this EMP.
* **Environmental and Health Training and Awareness**

ESKOM will ensure that its employees are adequately trained with regard to the implementation of the EMP, as well as regarding environmental legal requirements and obligations. All employees should have an induction presentation on environmental awareness. Where possible the presentation will be conducted in the language of the employees. The environmental training should, as a minimum, include the following:

* The importance of conforming with all environmental policies, procedures, plans and systems;
* The significant environmental impacts, actual or potential, which could result from their work activities;
* The environmental benefits of improved personal performance;
* The roles and responsibilities in achieving conformance with the environmental policy and procedures, including emergency preparedness and response requirements;
* The potential consequences of departure from specified operating procedures
* The mitigation measures to be implemented when carrying out their work activities;
* The importance of not littering;
* The need to use water sparingly;
* Details of, and encouragement to, minimising the production of waste and re-use, recover and recycle waste where possible;
* Details regarding archaeological and/or historical sites which may be unearthed during construction, and the procedures to be followed should these be encountered;
* The procedures which should be followed should a grave or any other archaeological finds be encountered or unearthed during the construction phase;
* Details regarding flora and fauna of special concern, including protected/endangered plant and animal species, and the procedures to be followed should these be encountered during construction.
* **Health and Safety**

Eskom must ensure that compliance with the Occupational Health and Safety Act of 1993 and Section 24 of the 1998 Constitution is included as a prerequisite in all tender documents applicable to all phases of project development.

* **Emergency Preparedness**

ESKOM’s environmental emergency procedures ensure that there will be an appropriate response to unexpected or accidental actions or incidents that will cause environmental impacts, throughout the life cycle of the project. Such incidents may include, inter alia:

* + Accidental discharges to water and land;
  + Accidental exposure of employees to hazardous substances;
  + Accidental veld fires;
  + Accidental spillage of hazardous substances;
  + Specific environmental and ecosystem effects from accidental releases or incidents

The Emergency Preparedness Plan

* Construction employees shall be adequately trained in terms of incidents and emergency situations.
* An emergency preparedness plan will include details of the organisation (manpower) and responsibilities, accountability and liability of personnel.
* The emergency preparedness plan shall include a list of key personnel.
* Details of emergency services (e.g. the fire department, spill clean-up services, etc.) shall be listed.
* Internal and external communication plans, including prescribed reporting procedures shall be listed.
* Actions to be taken in the event of different types of emergencies shall be included.
* Information on hazardous materials, including the potential impact associated with each, and measure to be taken in the event of accidental release shall be listed.
* Training plans, testing exercises, and schedules for effectiveness shall be included.
* ESKOM will comply with the emergency preparedness, and incident and accident-reporting requirements, as required by the Occupational Health and Safety Act, 1993 (Act No 85 of 1993), the National Environmental Management Act, 1998 (Act No 107 of 1998), the National Water Act, 1008 (Act No 36 of 1998) and the National Veld and Forest Fire Act, 1998 (Act No 101 of 1998) as amended, and/or any other relevant legislation.

Spillages

* The streams, seepage areas and fountains must be protected from direct or indirect spillage of pollutants such as refuse, garbage, cement, concrete, sewage, chemicals, fuels, oils, aggregate, wash water, organic materials and bituminous products.
* In the event of a spillage during the construction phase, the responsibility for spill treatment will be with ESKOM and ESKOM will be liable to arrange for competent assistance to clear the affected area.
* ESKOM will compile and maintain environmental emergency procedure, to ensure that there will be an appropriate rapid response to unexpected or accidental environmental related incidents throughout the life cycle of the project.
* The individual responsible for, or who discovers a hazardous waste spill must report the incident to the Engineer.
* The Engineer will assess the situation in consultation with the SECO and act as required in all cases, the immediate response will be to contain the spill. The exact treatment of pollutes soil/water will be determined by die Engineer in consultation with the SECO. Areas cleared of hazardous waste will be re-vegetated.
* Should water downstream of the spill be polluted, and fauna and flora show signs of deterioration or death, specialist hydrological or ecological advice must be sought for appropriate treatment and remedial procedures to be followed. The costs of containment and rehabilitation will be for ESKOM’s account, including the costs of specialist input.

During an emergency situation, the following will apply

* + No person shall be allowed to approach a spill, fire, etc. unless he/she is equipped with the personal protective clothing and equipment.
  + The risk involved shall be assessed before anyone approaches the scene of the incident with the emergency response plan.
  + A written report shall be and forwarded to the relevant environmental authority within 24 hours of the incident.
  + Any known or discovered spillage of toxic substances into a stream or river should be followed by immediate monitoring of the receiving streams and rivers.

Incident Reporting and Remedy

If a leakage or spillage of hazardous substances occurs as a result of ESKOM’s activities or other users, the local emergency services will be immediately notified of the incident. The following information must be provided:

* The location;
* The nature of the load;
* The status of the site of the accident itself (i.e., whether further leakage is still taking place, whether the vehicle or the load is on fire, etc.).

Written records of the corrective and remedial measures decided upon, and the progress achieved therewith over time, must be kept. Such progress reporting will be important for monitoring and auditing purposes. The written reports may be used for training purposes in an effort to prevent similar future occurrences.

Fires

* The adjacent landowners will be informed and/or involved in case of any fire.
* It must be ensured that the basic fire-fighting equipment is supplied to all living quarters, site offices, kitchen areas, workshop areas and stores.
* Welding gas cutting or cutting of metal will only be allowed inside the working/demarcated areas and with appropriate fire-fighting equipment at hand.

Checking and Corrective Action

Non-compliance with the specifications of the EMP constitutes a breach of Contract for which ESKOM must be immediately notified accordingly. ESKOM will be deemed not to have complied with the EMP if;

* There is evidence of contravention of the EMP specifications within the boundaries of the construction site, site extensions and access roads;
* There is contravention of the EMP specifications which relate to activities outside the boundaries of the construction sites;
* Environmental damage ensues due to negligence;
* Construction activities take place outside the defined boundaries of the site;
* ESKOM fails to comply with corrective or other instruction.

Non-compliance will be dealt with in terms of the contract documentations signed by the various parties.

* **Monitoring**

Monitoring will be undertaken as and when required. Any incidents that might have a detrimental impact on the environment will be investigated and the environmental monitoring will be conducted. Complaints received will be checked through verifiable monitoring.

* **Inspections**

Ongoing visual inspections will be conducted daily by the ECO. The ECO will spend time on site on the lookout for any unsafe acts and activities that transgress the requirements as specified in the EMP to define what action shall be taken to rectify the problem and prevent its reoccurrence.

* **Written instructions**

Written reporting will be given following an audit. The written instructions will indicate the source or sources of the problems identified on site and propose solutions to those problems. The implementation to solutions will be assessed in a follow-up audit and further written instructions issued if required. Maximum allowable response time is 4 working days.

* **Liaison**

ESKOM will comply with the requirements for public consultation as required by the National Environmental Management Act, 1009 (Act No 107 of 1998).

Throughout the project, ongoing liaison will be maintained with authorities and communities alike to ensure that the following is affected;

* Timeous advanced warning of any project activities that may have some impact on the surrounding communities i.e. blasting.
* Ongoing feedback on the environmental performance of the project.
* A complaints’ register needs to be opened and maintained by the ECO. The register will contain the contract details of the person who made complaints and information regarding the complaint itself, including the date of submission.

**ENVIRONMENTAL CONTROL OFFICER**

* An independent Environmental Control Officer (ECO) must be appointed by ESKOM prior to commencement of construction and DEA must be notified of such an appointment.
* ESKOM will nominate a knowledgeable member of staff on site who will be responsible for liaison with the ECO. This person will report to the Engineer in an advising capacity.
* The key responsibility of the ECO is to ensure that all the conditions stipulated in the Environmental Authorisation (EA) are being adhered to and should monitor project compliance with the conditions of the Environmental Authorisation, environmental legislation and the recommendations of the EMP. He/she must take action if specifications are not followed;
* The ECO must ensure that all the environmental authorisations and permits required in terms of the applicable legislation have been obtained prior to construction commencing;
* The ECO must monitoring and verify that environmental impacts are kept to a minimum;
* The ECO must assist ESKOM in finding environmentally responsible solutions to problems;
* The ECO must keeping accurate and detailed records of all activities on site;
* The ECO must monitor ESKOM’s undertaking to provide environmental awareness training for all new personnel on site.
* The ECO must liaise with the nominated Eskom representative for the project and/or attend site meetings where applicable and where necessary inspect the construction site on a regular basis to ensure that the mitigation and rehabilitation measures are applied.
* The ECO might make reasonable amendments to the EMP in co-operation with the contractor and Eskom.
* The ECO must enforce penalties for non-compliance.
* The ECO shall remained employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is handed over to ESKOM by the contractor for the operation.
* Any conservation authority/institution and/or government department as listed in the List of Interested and Affected Parties for the project should be allowed reasonable access to the construction site on request and arrangement with the ECO, the Eskom representative and the Contractor.

**DEPARTMENT OF WATER AND SANITATION**

This Department of Water Affairs has confirmed rights to inspect the project at any time to ensure compliance with relevant legislation.

**CULTURAL HERITAGE**

In the unlikely event that any heritage resources of significance is exposed during the development of the project, the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notify in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the mitigation measures.

**Palaeontological Environment**

In the extremely unlikely event that fossils are exposed in the process of development activities, it will create a unique opportunity to explore the area for fossils. It is thus recommended that, should fossils be exposed, a qualified palaeontologist be contacted to assess the exposure for fossils so that the necessary rescue operations are implemented. Depending on the nature of the fossils discovered, this could entail excavation and removal to a registered palaeontological museum collection. A list of professional palaeontologists is available from South African Heritage Resources Agency (SAHRA).

**DESIGN AND PRE-CONSTRUCTION PHASE**

# ENVIRONMENTAL SUPERVISION

The ECO must inspect the construction site on a regular basis (during pre-construction, construction and post-construction periods) to confirm the current state of the site and to ensure that the mitigation and rehabilitation measures are applied as specified in the EMP. These officers might make reasonable amendments to the EMP in co-operation with the contractor.

**DESIGN AND APPROVALS**

* Note that any relevant wayleave applications must be lodged with the relevant roads authority for the crossing of the R546 (Frankfort-Newcastle Road) prior to construction. Adherence should also be given to their general requirement in terms of communication required from Eskom– i.e. in terms of construction details such as activities planned parallel to any of their road; advertisements to be placed; construction of overhead services; temporary closure of traffic if required; the transporting of abnormal equipment on provincial roads; blasting requirements; no structures to be placed within a road reserve; etc.
* The Eskom Vrede-Tembalihle 11kV Project should not interfere with the servitude rigths of the Sasol pipeline across the site.

**Specifc requirement from the Department of Water & Sanitation**

* Access to the construction area must take place outside the seeps and fountain areas, from the existing entrances from both sides of the stream, not through it.
* The boundaries of the sensitive areas must be demarcated on site prior to commencement of construction.
* The pylons must be placed outside the boundaries of the wetland and riparian zone as identified by Dr Brown.

**Specific requirement from Enviroguard Ecological Services**

* The specific placement of the pylons should be designed outside the boundaries of the riparian edge zone as well as the wetland edge zone. Refer to the map on the following page of which the shape files had been provided to Eskom for integration in the design and planning process.



**EDUCATIONAL PROGRAMMES**

An environmental education programme should be followed to ensure that the construction workers are well aware of relevant issues such as

- the purpose of conservation of the natural environment;

- the restriction on cutting of firewood from the veld;

- pollution control and waste management;

# CONSTRUCTION SITE

Due to its close proximity to the Eskom CNC and associated facilities in Vrede as well as the limited extent of the project, it is not expected that a construction site would be erected for the purpose of this project;. However, the following requirements must be met in the case that a construction site would be required :

* The locality of the site; access and working programme must be agreed with the landowner which is the Phumelela (Vrede) Local Municipality, Municipality Manager, For attention: Mr Bruce Kannemeyer (PA: Ms Zinhle Mdake; corner of Prinsloo & Kuhn Streets; Vrede; tel 058 913 8300; [Bwkann5@yahoo.com](mailto:Bwkann5@yahoo.com) / [Zinhlemdaki@gmail.com](mailto:Zinhlemdaki@gmail.com)
* The construction camp must be placed an appropriate distance from any facility where it can cause a nuisance.
* Accommodation for labourers must either be limited to guarding personnel on the construction site (with labourers transported to and from existing neighbouring towns) or a separate fenced and controlled area where proper accommodation and relevant facilities are provided.
* The construction site office and storage areas for material and equipment must be fenced in to prevent impacts and human interference to spread further than the site.
* Storage facilities for construction equipment must be provided for.
* The contractor must be encouraged to employ local people as far as is reasonably practical and encourage the contractor to transport them daily to and from the site. This would reduce solid and liquid waste production and water demand at the site camps.
* Minimise on-site storage of petroleum products.
* Proper maintenance procedures in place for vehicles and equipment must be ensured.
* Servicing of vehicles must take place in designated areas with appropriate spill management procedures in place.
* Measures to contain spills must be readily available on site (spill kits).
* Sufficient ablution and proper cooking facilities must be provided at the site camp.
* Liquid waste (grey water) must be disposed with sewerage.
* Portable chemical toilets must be used along the relevant portions of the powerline under construction. It must be placed within the construction servitude outside the edge zones as described by the ecological specialist for the project outside any watercourse.
* Chemicals toilets must be placed and serviced by registered companies only and on a regular basis.
* No effluent may be dumped in the veld and the use of the open veld for ablution is prohibited.
* There should be one toilet for every fifteen workers.
* The contractor must ensure compliance with stringent daily clean up requirements of site camp inert waste (waste concrete, reinforcing rods, waste bags / bins, wire, timber etc) and dispose at municipal waste disposal sites.
* Fire breaks must be constructed on the inside perimeter to prevent fires from spreading from the site as well as fires entering the site from adjacent land in accordance with the ESKOM Standard SCSASAAJ6: Rev 0, Distribution of Fire Risk Management.

**Specific requirement from Enviroguard Ecological Services**

It is preferable that the pylons are erected during the dry season so as to do as little damage to the ecosystem as possible.

**ACCESS ROADS**

**Specific requirement from Enviroguard Ecological Services**

* Access to the property must be negotiated in advance with the land-owners. All agreements reached shall be documented in writing and no verbal agreements should be made.
* The condition of existing access / private roads to be used shall be documented with photographs.
* Vehicle access to the powerline servitude must as far as possible be limited to existing roads. If a new access roads need to be constructed it should follow cleared areas such as livestock pathways.
* The Contractor shall properly mark all access roads. Markers shall show the direction of travel as well as tower numbers to which the road leads. Unnecessary traversing of adjacent open areas is discouraged.

**FIRE MANAGEMENT PLAN**

A fire management plan must be identified, implemented and maintained, commencing prior to construction and maintained throughout the operational phase. The following additional measures must be included:

* No fires may be made for the burning of vegetation and waste.
* No open fires are to be made on site – cooking facilities must be provided.
* No firewood may be collected.
* Fire-fighting equipment must be readily available on site during all times.
* Branches and other debris resulting from pruning processes should not be left in areas where it will pose a risk to infrastructure.
* Fires shall not be made for the purpose of chasing or disturbing indigenous fauna.

**Specific requirement from Enviroguard Ecological Services**

* The frequent burning of the grassland vegetation will have a negative impact on the environment and could also result in loss of human life and property.
* No open fires shall be allowed on site under any circumstance.
* The Contractor shall have fire-fighting equipment available on all vehicles working on site, especially during the dryer winter months.

**APPOINTMENT OF CONTRACTORS**

* Environmental clauses as referred to in this EMP should be included in contract documents of all contractors.
* All identified site specific measures in terms of the river, seeps, fountains and wetlands for the specific property must be included in the contract with the Contractor and implemented by the Contractor during the construction phase.
* The appointment of contractors with proven track records of sound environmental performance should be given priority.
* The Contractor must ensure that the majority of unskilled labour is obtained from the local residents in the macro area.
* The contractor must ensure that he is well aware of the implications of and must ensure compliance with the following legal requirements, guidelines and policies:
* All relevant ESKOM standards, specifications and procedures to manage the significant aspects with regards to oil management, bush clearing, entrance of private property, etc.
* Requirements in terms of removing cutting and/or trimming of protected trees in terms the National Forest Act, Act 84 of 1998 (NFA) as amended 2014.
* The Occupational Health and Safety Act of 1993 and Section 24 of the 1998 Constitution.
* All Sections and Regulations of the National Water Act, 1998(Act 36 of 1998) must be complied with; specifically specifications as described in Section 19 on Pollution and Waste.
* Environmental Best Practice Guidelines and Specifications, compiled by the Department of Water and Sanitation.
* Legislation with regard to graves that is included in the National Heritage Resources Act (No 25 of 1999). It should be noted that the act also distinguishes between various categories of graves and burial grounds. Other legislation with regard to graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended).
* The contractor must be aware that all waste material generated during and after construction should be disposed of at a permitted landfill site and an agreement letter between the municipality and the contractor should be obtained.

**CONSTRUCTION PHASE**

# GROUND AND SURFACE WATER

* No abstraction of water for construction purposes will be allowed without the written consent of the Department of Water and Sanitation.
* Under no circumstances must surface or ground water be polluted.
* Refer to the item Waste Management which measures to restrict and/or prevent potential of ground and surface water pollution.
* All stormwater runoff must be managed efficiently so as to avoid stormwater damage and erosion to adjacent properties.
* During and after construction, stormwater control measures should be implemented especially around stockpiled soil, excavated areas, trenches etc. to avoid the export of soil into the watercourse.
* Stormwater should not be discharged into the working areas and it should be ensured that stormwater leaving the footprint of the proposed development areas is not contaminated by any substance, whether that substance is solid, liquid, vapor or any combination thereof.
* Stockpiling op construction material and soils should be such that pollution of water resources is prevented and that the materials will be retained in a storm event.
* Drinking water and water for ablution facilities must be provided to all construction workers on the construction site.
* If pollution of any surface or groundwater occurs, the Regional Representative of the Department of Water and Sanitation as well as the ECO must immediately be informed.

**Specific requirement from Enviroguard Ecological Services**

* The two seeps should be fenced off before any construction starts and declared as no-go areas.
* No activities must be allowed on the river bank or its associated floodplain.
* Access to the proposed powerline areas along the wetland and seep area must be achieved from the north (i.e. R546) and not through the wetland.
* No large vehicles should travel in or across the wetland area.
* Vehicle access to the powerline servitude must as far as possible be limited to existing roads. If a new access roads need to be constructed it should follow cleared areas such as livestock pathways.
* Workers must be limited to areas where the pylons will be erected and the two seep areas must be strictly regulated as a “no-go” area.

# WASTE MANAGEMENT

General household waste-

* Littering or illegal dumping of any waste material is prohibited.
* Provision must be made for the collection of all waste materials either by the contractor of via municipal waste removal. Note that preference should be given to bins for containment and not plastic bags.
* All waste generated during construction must be disposed of at a permitted waste site.
* No waste disposal holes may be made on site and waste may not be burnt
* Rubbish bags must be provided on the construction site to prevent littering.
* General household waste (i.e. strict control over labourers; no burning or burying of waste; provision of dustbin and garbage bags; regular removal preferably by municipal waste removal; etc)

Construction Waste

* Expected constructed waste (unused steel, conductor cables, cement or concrete) and general waste around the construction site (plastic, tins and paper) may degrade the environment if not disposed in the correct manner.
* Daily clean-up and temporary storage of construction waste must take place.
* Material that cannot be recycled such as concrete blocks should be removed to a registered municipal landfill site. The contractor must ensure with legal compliance with the relevant authority.
* Any excess construction material that should be moved to Eskom storage facilities or be sold for recycling

Hazardous Waste

The following precautionary methods are to be implemented for the storage and handling of oil and substances that could impact on the soils, ground- and surface water:

* No hazardous waste may be stored on site in the absence of authorisation in terms of the National Environmental Waste Act (NEMWA) if applicable.
* All hazardous substances at the site must be adequately stored and accurately identified, recorded and labelled. The storage of any hazardous substances must take place in a secured lock-up building or covered area.
* A container filled with sand to soak up any spillages, as well as an empty container into which the “contaminated” sand could be placed and stored for collection by the supplier of the chemicals or oils must be provided.
* No fuel or petrol may be stored on the site without the necessary authorisations in place.
* On-site storage of petroleum products should be restricted.
* Any temporary fuel storage tanks (if applicable) is to be designed, installed and managed in accordance with the relevant Oil Industry Standards and SANS codes.
* Stormwater should not be discharged into the working areas and it should be ensured that stormwater leaving the footprint of the proposed development areas is not contaminated by any substance, whether that substance is solid, liquid, vapour or any combination thereof.
* Adequate oil containment precautions must be taken.
* All hazardous substance spills must be reported, recorded and investigated.

Construction Vehicles

* Should any transfer of vehicle fuel take place on site, it is important to demarcate a specific area for this purpose. This area should be covered with an impermeable layer to prevent any penetration of fuel and oil spillage into the soil.
* All construction vehicles should be serviced on a regular basis to minimise the risk of oil spillage on site. If the vehicles have to be services on site, it has to take place on a dedicated concrete surface.
* When not in use, construction vehicles must be parked in an area provided with an impermeable layer to prevent leaks and spills from penetrating the substrate.
* All petrochemical leaks and spills must be appropriately contained and disposed of at a licensed waste disposal site.
* If a spill from a construction vehicle occurs it must be reported to the ECO with immediate effect. A bio-remediation contractor must be appointed to rehabilitate large oil spills. Small oil spills must be cleaned immediately with an oil spill kit.
* Minimise on-site storage of petroleum products must take place.
* Bund storage tanks must have a 120% of capacity.
* Proper maintenance procedures must be in place for vehicles and equipment.

**Specific requirement from Enviroguard Ecological Services**

* All vehicles associated with the construction activities must be in a serviced condition to prevent oil leaks etc and the possible contamination of the wetland and stream.

Sewage waste

* Portable chemical toilets must be used along the relevant portions of the powerline under construction.
* It must be placed and serviced by registered companies only and be services on a regular basis.
* No effluent may be dumped in the veld and the use of the open veld for ablution is prohibited.
* There should be at least one toilet for every fifteen workers.

**Specific requirement from Enviroguard Ecological Services**

* Provision of adequate toilet facilities must be implemented to prevent the possible contamination of soil and surface water in the area. Mobile toilets must be provided in order to minimize un-authorised traffic of construction workers outside of the designated areas.
* Sanitation facilities shall be located within 100m from any point of work, but not closer than 50 m from the drainage channel.

**PREPARATION OF SERVITUDE / VEGETATION CLEARANCE**

* The procedures for vegetation clearance and maintenance within overhead powerline servitudes and on ESKOM owned land, updated September 2009 must be implemented.
* Indigenous vegetation that does not interfere with the safe operation of the powerline should be left undisturbed.
* Where clearing for an access and maintenance road is essential, the maximum width to be cleared is 8m. Existing access roads along the servitude should be used as far as possible.
* Clearing for pylon positions must be the minimum required for the specific tower.

**CONTROL OF ALIEN VEGETATION**

* Alien vegetation in servitudes shall be managed in terms of the Alien and Invasive Species Regulations, 1 August 2014 (GNR 598) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) to the extent necessary to prevent or to contain the occurrence, establishment, growth, multiplication, propagation, regeneration and spreading such plants within servitude areas or land owned by ESKOM.
* Due to the nature of alien vegetation, a control programme for alien vegetation control must be implemented. The implementation thereof could to be more frequent than the three year interval recommended for indigenous vegetation. Alien vegetation can grow at rates significantly faster than 1 meter per year.
* The use of herbicides shall be in compliance with the terms and conditions of The Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act 36 of 1947) as amended.

**Specific requirement from Enviroguard Ecological Services**

* All alien plants should be eradicated from the proposed powerline route. Litter and rubble must also be cleared from the channel.
* Areas where the exotic invasive kikuyu grass are dominant should be cleared and replanted with indigenous grass species such as *Cynodon dactylon* (couch grass), *Eragrostis curvula, Panicum maximum* and *Digitaria eriantha.* The use of these indigenous species is recommended; it occurs naturally in the area as well as requiring less water and maintenance and are drought and disease resistant.

**PROTECTION OF FAUNA AND FLORA**

* No animals or birds may be fed, disturbed, hunted or trapped as well as no plant material removed or stored if not part of identified vegetation clearance.
* Some species of indigenous trees are present in the vicinity of the proposed powerline route and are protected by law in terms of the National Forest Act, Act 84 of 1998. These trees include *Sclerocarya birrea* and *Combretum imberbe*. These trees may not be pruned and/or removed in the absence of authorisation from the Department of Forestry and Fisheries.
* Protected or endangered plant species that will be affected by the physical footprint of the powerlines or ancillary infrastructure and associated construction works should require the necessary permits to cut or remove them.
* The rescue of protected and endangered plants that can be replanted should be coordinated by the ECO in consultation with the provincial environmental authorities, and the appropriate post-construction rehabilitation measures must be implemented.
* The harvesting of medicinal plants, which may occur on the site prior to site clearance, should be coordinated by the ECO.

**Specific requirement from Enviroguard Ecological Services**

* All vegetation not interfering with the operation of the line shall be left undisturbed and this included all the smaller shrubs and herbs which don’t interfere with the lines.
* As little vegetation as possible should be cleared and these areas must be restored immediately after construction.
* Disturbed areas of natural vegetation as well as cut and fills must be rehabilitated immediately to prevent soil erosion as well as alien invasive vegetation invasion.
* Vegetation clearance should be restricted to the actual footprint especially adjacent to the wetland edge.

**FAUNA AND AVIFAUNA IMPACT**

* No snares may be placed. No animals or birds may be hunted or trapped.
* All dismantling, construction and maintenance activities must be carried out according to best environmental practice principles so as to minimise habitat destruction (see in this respect the ESKOM Environmental Procedure, EPC 32-96).
* In particular, care is to be taken not to impact on riverine habitat in any way.
* The unnecessary removal of large trees is not allowed (see also in this respect the Procedure for Vegetation Clearance and Maintenance within ESKOM owned land, EPC 32-247).

**SOIL EROSION**

* Site specific mitigatory requirements as included in the table in the section “Specification applicable to all Phases of Project Development” must be adhered to.
* To cause the loss of soil by erosion is an offence under the Soil Conservation Act, 1969 (Act No 76 of 1969.)
* Access roads and site surfaces must be monitored for deterioration and possible erosion.
* Pro-active measures must be implemented to curb erosion and to rehabilitate eroded areas.
* All areas susceptible to erosion must be installed with temporary and permanent diversion channels and berms to prevent concentration of surface water and scouring of slopes and banks, thereby countering soil erosion.
* All cleared areas must be ripped and rehabilitated after construction. The top 200mm layer of topsoil must be removed and stockpiled in heaps not higher than 2m and replaced on the construction areas once the activities have been completed. The affected areas should be replanted with a grass mixture indigenous to the area.
* All vehicle movement must be along existing roads or tracks as far as possible.
* Construction during the dry months of the year should be considered in order to overcome the problems caused by excessive moisture.

**COMMUNITY ISSUES (SAFETY, SECURITY, NOISE, DUST, ETC.)**

* Farm gates and fences must be left in the state it was found.
* Under no circumstances shall access be gained by cutting or “dropping” of fences. All gates shall be left closed and the ESKOM servitude gates shall be securely locked at all times.
* Construction workers must be extremely careful not to damage any property along the proposed route. Should any damage occur it should be reported to the Environmental Officer and repaired to the written satisfaction of the landowner.
* Removal of agricultural products is prohibited.
* No firewood may be collected without the landowner’s permission.
* No fires are to be made on private property.
* In order to prevent and/or minimise crime, it is required that all construction workers be supplied with controlled serviced accommodation or be supplied with transport to and from their homes.
* All adjacent landowners have to be informed of the blasting programme (if applicable) prior to any blasting taking place. Contractors must liaise personally with adjacent landowners. All communication in this regard must be documented. Blasting may only be undertaken by specialists in the field and should be limited to small localised areas. All relevant legislation must be adhered to.
* All contractors and construction workers will be issued with temporary permits to enter the property.
* All construction workers will be allowed only for specified day light hours. Transport should be made available by the Contractorto remove labourers from the site after working hours.
* Secure accommodation facilities must be provided for guarding personnel.
* Supervision of labourers must at all times take place.
* Construction hours will be restricted to specific periods that exclude Sundays and public holidays.
* Sweeping of construction sites, clearing of building rubble and debris and watering of construction sites (storage areas, roads, etc.) must take place at least once a day.
* All excavated areas must be clearly marked and barrier tape must be placed around them to prevent humans and animals from falling into them.

**Specific requirement from Enviroguard Ecological Services**

* The Contractor shall under no circumstances interfere with the livestock present on the property without the Landowner being present. This includes the moving of livestock where they interfere with construction activities.
* Should the Contractors workforce obtain any livestock for eating purposes, they must be in possession of a written consent note from the Landowner.
* Close site supervision must be maintained during construction activities.
* All litter and rubble must be removed on completion of construction.
* All alien invasive plants present along the proposed powerline route should be removed from the site to prevent further invasion.
* Contract employees must be educated about the value of the environment and the importance of its conservation.
* Construction activities are to be restricted to business hours in order to limit disturbance of surrounding land owners in terms of inter alia noise.

**POST-CONSTRUCTION & OPERATIONAL PHASE**

# SOIL EROSION

* Specifications for topsoil storage and replacement to ensure sufficient soil coverage as soon as possible after construction activities must be implemented if and where relevant.
* All embankments (if any) must be adequately compacted and planted with grass to stop any excessive erosion and scouring of the landscape.
* After construction, all roads should be rehabilitated.
* The construction site (if relevant) must be rehabilitated and replanted with suitable, indigenous grass to prevent erosion.
* The eradication of alien vegetation should be followed up as soon as possible by replacement with indigenous vegetation to ensure quick and sufficient coverage of exposed soil.

# SITE CLEARANCE

* After construction all building material, signs of excess concrete, equipment, houses, ablution facilities, building rubble, refuse and litter must be removed and cleaned up from the construction site as well as from the store room by the contractor.
* Items that can be used again should be recycled. Unusable waste steel and aluminium must be sold to scrap dealers for recycling or else be stored at the Eskom stores for re-use.
* Once construction is completed, the contractor has to obtain written consent from the relevant landowner that the construction site, construction areas, access routes, etc. are sufficiently and adequately rehabilitated to the landowners’ satisfaction.

# COMMUNITY ISSUES

* All complaints received with regards to poor conduct of maintenance ESKOM personnel and/or maintenance contractors, malfunction of or damage to ESKOM structures, bird killings as a result of electrocutions and/or collisions, etc. will be investigated by ESKOM in cooperation with all the relevant stakeholders.
* All Eskom personnel and/or contractors must be supervised at all time when access to the line is required for maintenance and/or inspection purposes.

**VEGETATION MAINTENANCE OF THE SERVITUDE**

* The document “Eskom Environmental Procedure: Procedure for Vegetation Clearing and Maintenance within Overhead Powerline Servitudes and on Eskom owned land”, updated September 2007, must be implemented.
* Selective bush clearing must take place. Indigenous vegetation which would not interfere with the safe operation of the new powerline should be left undisturbed
* Alien vegetation in servitudes shall be managed in terms of the Alien and Invasive Species Regulations, 1 August 2014 (GNR 598) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) to the extent necessary to prevent or to contain the occurrence, establishment, growth, multiplication, propagation, regeneration and spreading such plants within servitude areas or land owned by Eskom.
* Due to the nature of alien vegetation, a control programme for alien vegetation control must be implemented. The implementation thereof could to be more frequent than the three year interval generally recommended for indigenous vegetation. Alien vegetation can grow at rates significantly faster than 1 meter per year.

**FIRE RISK MANAGEMENT**

* The existing complaints structure must be revised by Eskom and be updated on a regular basis and communicated with all the affected landowners to ensure effective response and service supply.
* A list with the contact details of adjacent landowners as well as relevant Eskom staff must be listed and updated regularly to ensure effective communication in the case of emergencies such as veld fires.
* Fire breaks must be constructed on the inside perimeter to prevent fires from spreading from the site as well as fires entering the site from adjacent land in accordance with the Eskom Standard SCSASAAJ6: Rev 0, Distribution of Fire Risk Management.
* Branches and other debris resulting from pruning processes should not be left below conductors or in areas where it will pose a risk to infrastructure.
* Debris shall not be burnt under any circumstances
* Fires shall not be made for the purpose of chasing or disturbing indigenous fauna.

# MONITORING PROGRAMMES

* The Environmental Officer should inspect the construction site on a regular basis to ensure that the mitigation and rehabilitation measures are applied as specified in the Environmental Management Plan.
* Inspection of the servitude should include monitoring of the servitude line during the Post-Construction & Operational Phase to detect any potential erosion problems timeously. Mitigatory measures should immediately be identified and implemented by Eskom in cooperation with the landowner.
* Any incidents resulting from Eskom structures and operation that might have a detrimental impact on the environment will be investigated and measures, if applicable, will be identified in close cooperation with the affected parties and/or stakeholders and be implemented and monitored accordingly.
* All landowners should communicate any bird related incidents and/or bird fatalities to identify and implement mitigatory measures in cooperation with a bird impact specialist if possible.
* Eskom must at all times follow acceptable maintenance and operational practices to ensure consistent, effective and safe performance of the infrastructure.

**ACCESS AND SERVITUDE MAINTENANCE ROADS**

* Should any signs of erosion be evident along the access and maintenance roads, remedial action should take place as soon as possible.
* In areas which is prone to erosion, soil berms could be placed on the roads at convenient intervals, not exceeding a height of 0,5 m, to curtail the speed and erosion potential of any stormwater flowing across the gradient of the site. This could be especially applicable to roads on steep slopes.
* Should any road works and/or rehabilitation be required, monitoring thereof should take place, especially during the rainy season, to ensure the effectiveness thereof.
* Eskom access and maintenance roads may only be used for its intended purpose and only by Eskom personnel. The use of these roads for any other purpose is prohibited.
* Drivers must stay within the speed limit in order to ensure the safety of other road users.
* All general SA road safety rules and regulations will apply while driving on Eskom’s access and maintenance roads.
* Access to the powerline route shall be by means of approved access roads only. No unauthorised access is permitted.
* Off-road driving is strictly prohibited.
* Should any road be damaged by Eskom, the applicable landowner should immediately be informed and remedial action should be taken as soon as possible.
* Eskom personnel should treat the property with respect at all times, for example gates should be lock after entering and exiting, no faunal or flora may be destroyed, killed or collected, the veld may not be used for ablution facilities and swimming in any natural or manmade water features are prohibited.
* A maximum speed limit of 40km/h should be adhered to when driving on small (i.e. 2 wheel track) roads.
* The driving speed should be appropriate to the road conditions at all times. This could ensure the safety of the driver, other occupants as well as surrounding properties.

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