

# Environmental Management Programme (EMP) for the proposed relocation of three Eskom 400KV power lines that traverse Khwezela Colliery in Mpumalanga – Public Review

Report Prepared for

**Eskom**



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Report Prepared by

 **srk** consulting

The logo for srk consulting features a stylized orange 's' symbol followed by the letters 'srk' in a bold, orange sans-serif font, and the word 'consulting' in a grey sans-serif font.

July 2017

# **Environmental Management Programme (EMP) for the proposed relocation of three Eskom 400KV power lines that traverse Khwezela Colliery in Mpumalanga – Public Review**

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## Disclaimer

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# 1 Introduction and Scope of Report

## 1.1 Introduction

The purpose of the Environmental Management Programme (EMP) is to ensure that social and environmental impacts, risks and liabilities identified during the process are effectively managed during the construction, operations and closure of the project. The EMP specifies the mitigation and management measures to which Eskom is committed, and shows how the Project should mobilise organisational capacity and resources to implement these measures. The EMP also shows how mitigation and management measures will be scheduled.

The key objectives of the EMP are to:

- Formalise and disclose the programme for environmental and social management
- Provide a framework for the implementation of environmental and social management initiatives.

Best practice principles require that every reasonable effort be made to reduce and preferably to prevent negative impacts, while enhancing positive benefits, especially within the environment and communities most directly affected by the proposed project. These principles are guiding in the EIA process.

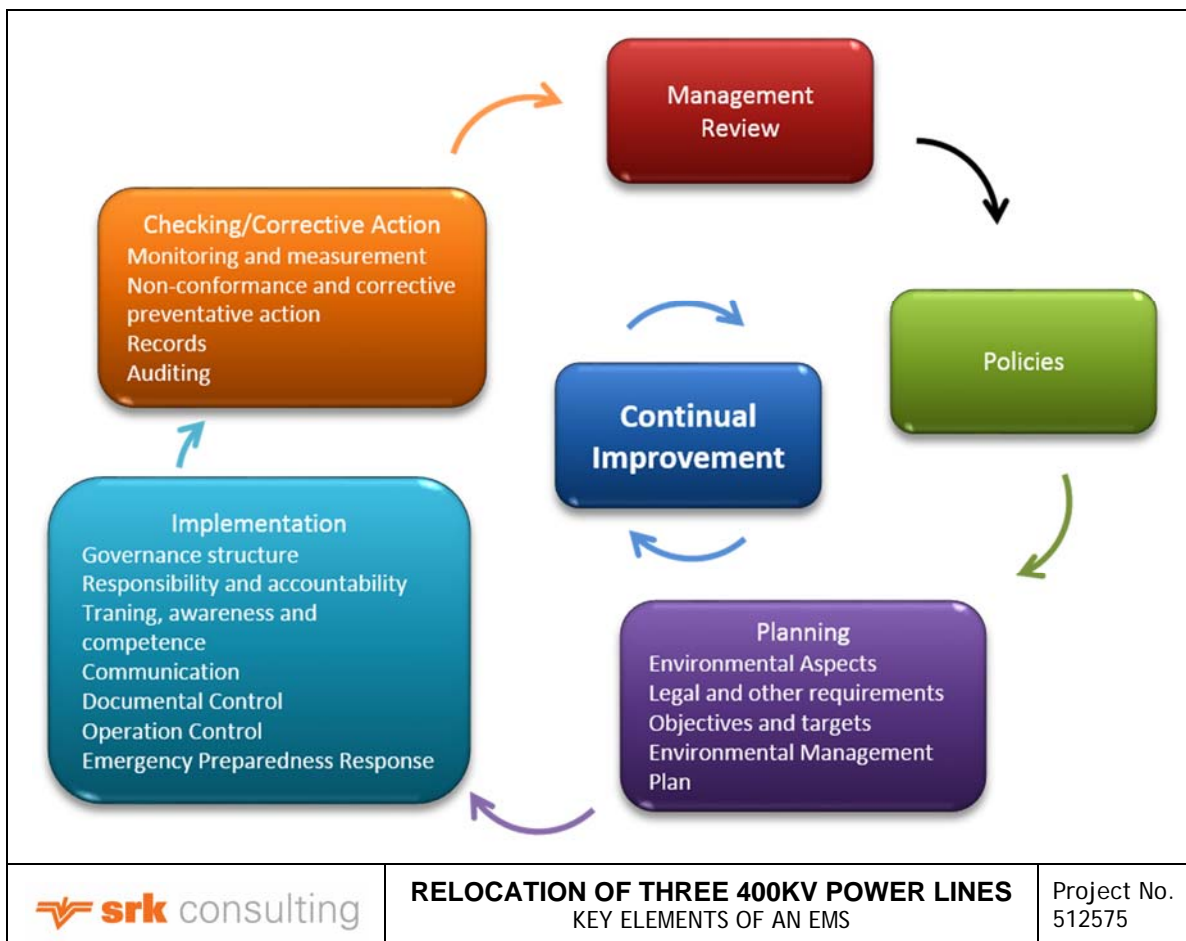
This EMP covers information on the management and/or mitigation measures that should be taken into consideration to address impacts in respect of:

- Planning and design
- Pre-construction and construction activities
- Operation
- Decommissioning of existing power lines.

It is necessary to highlight that the EMP is a living document that should be periodically reviewed and updated by Eskom. It must also be noted that the EMP should be read in conjunction with the assumptions, limitations and exclusions noted in Section 9 of this report.

As part of ongoing implementation, this EMP will be publicly disclosed during the stakeholder engagement process. An opportunity will be offered to participating stakeholders to provide comment.

**Figure 1-1** below illustrates the principle of continual improvement in development of a policy framework, environmental and social management planning, which are implemented through a number of plans, programmes and operating procedures using Eskom's corporate governance structure. Implementation is monitored on a regular basis to determine environmental and social performance and conformance, and corrective action is taken where necessary. Management review is undertaken on scheduled basis to determine whether the system reflects the requirements and commitments of the company. These combined elements comprise the Environmental and Social Management System (ESMS).



**Figure 1-1: Key elements of an ESMS**

\*Source: <http://infohouse.p2ric.org/ref/32/31028/ems/info/sme4.htm>

Provide a brief factual statement to introduce the report and outline what it covers.

## 1.2 Summary of Environmental and Social Management Measures

Table 1.1- 1.3 below summarise the proposed mitigation and management measures for the impacts identified in this EIA through the specialist work undertaken to date.

The tables are organised by project phase for the project covering pre-construction/construction, operation and decommissioning/ closure phases, and are clustered according to biophysical and socioeconomic aspect and impacts. These tables represent the recommendations arising from the specialist studies undertaken to date for the EIA/EMP.

**Table 1-1: Construction Phase of the proposed power line**

Aspect	Impact	Mitigation Measures	Performance Criteria	Responsibility Party
<b>Activity: Pre-construction – stripping of soils, clearing of land</b>				
Environmental and social awareness and training	EA1: Non-compliance with the EMP and quarry standards.	<ul style="list-style-type: none"> <li>• Appointment of suitably staff qualified to oversee implementation of the EIA/ EMP during all phases of the project, as well as to undertake inspections and audits on a regular basis</li> <li>• An induction and training program as per the existing Eskom induction programme covering the EMP, environmental awareness, dealing with environmental incidents and waste management</li> <li>• All staff commissioned during pre-construction and construction, including sub-contractors, should be made aware of ESMP requirements through the induction program as well as on notice boards at the contractors' camps during the construction phase. These notice boards should cover the EMP, environmental and social awareness, dealing with emergencies and waste management</li> <li>• Specific training in safety for those individuals working in high risk environments</li> <li>• The Environmental Emergency preparedness procedure and the non-conformance and corrective action procedures should be updated for the current transmission projects for implementation in emergency situations such as oil or fuel leaks and spills, fires, sewage spillage, and damage to community property</li> <li>• The emergency preparedness procedure includes requirements to contact the Health and Safety officers following an emergency or incident</li> </ul>	<ul style="list-style-type: none"> <li>• Audit / incident reports</li> <li>• Staffs are able to respond correctly onsite to environmental and social aspects of their work</li> <li>• A coherent, immediate response to all emergencies</li> </ul>	Eskom
<b>Topography:</b> No impacts expected during the pre-construction and construction phase of the proposed power line.				



Aspect	Impact	Mitigation Measures	Performance Criteria	Responsibility Party
<b>Activity:</b> Construction of the new power line route				
<b>Biodiversity</b>	Impact B1: Loss of faunal and floral habitat, diversity and SCC	<ul style="list-style-type: none"> <li>• Avoid disturbance of wetland habitat unit during the determination of the location of the contractor camp (location of contractor camp to be determined by Eskom appointed contractor)</li> <li>• Installation of bird flappers at delineated wetland areas. Special bird flappers will be installed on the power lines to deter birds from flying into the power lines</li> <li>• Construction footprint to be demarcated as per the construction phase conditions outlined in section 4 in order to ensure that all construction activities remain within this footprint</li> <li>• Construction vehicles will be restricted to travel only on designated roadways to limit the ecological footprint of the proposed development</li> <li>• Implementation of the appropriate measures included in Eskom’s Transmission Vegetation Management Guideline, which include the relation of identified floral SCC and obtain the relevant permits, if required.</li> <li>• Prohibit the collection of plant material for medicinal purposes and fire wood</li> <li>• Rehabilitation measures must be implemented in areas where the soil surface was disturbed as Alien and Invasive Plants will promoted by these activities and faunal habitat will be lost due to encroachment of these species.</li> </ul>	<ul style="list-style-type: none"> <li>• Eskom Environmental Management Policy</li> <li>• Eskom Environmental Management Systems Policy</li> <li>• Eskom Environmental Impact Assessment Policy</li> <li>• Eskom Environmental Management Programme</li> <li>• Eskom Transmission Bird Perch Guidelines,</li> <li>• Eskom Bird Nesting Guidelines</li> <li>• Eskom Transmission Vegetation Management Guidelines</li> </ul>	Eskom

Aspect	Impact	Mitigation Measures	Performance Criteria	Responsibility Party
<b>Activity:</b> Clearing of power line servitude footprint				
<b>Soils</b>	Impact S1: Increase soil erosion	<ul style="list-style-type: none"> <li>• Construction footprint to be demarcated as per the construction phase conditions outlined in section 4 in order to ensure that all construction activities remain within this footprint</li> <li>• A regulated speed limit of <math>\leq 40</math> km per hour will be maintained to minimise dust generation during the construction activities</li> <li>• Regular dust suppression along the road during the construction phase, especially when strong wind conditions are predicted according to the local weather forecast</li> <li>• All disturbed areas can be re-vegetated with an indigenous grass mix to re-establish a protective grass strip within the power line servitude to minimize soil erosion and dust emission</li> <li>• Temporary erosion control measures will be used to protect the disturbed soils until adequate vegetation has established</li> <li>• Restricted access to prevent weed infestation particularly on the cultivated maize fields by implementing appropriate herbicide(s) to control the grass strip.</li> </ul>	<ul style="list-style-type: none"> <li>• Eskom Environmental Management Policy</li> <li>• Eskom Environmental Management Programme</li> <li>• Eskom Vegetation Management Guidelines</li> </ul>	Eskom
<b>Activity:</b> Vehicular traffic and construction activities				
<b>Soils</b>	Impact S2: Loss of soil resource due to soil compaction	<ul style="list-style-type: none"> <li>• All vehicular traffic should be restricted to the existing access roads and the proposed power line servitude as far as practically possible</li> <li>• A regulated speed limit of <math>\leq 40</math> km per hour will be maintained to minimise dust generation during the construction activities</li> <li>• Direct surface disturbance of the identified wetland soils including the Katspruit, Westleigh, and the Avalon/Bainsvlei soil forms can be avoided for construction roads and placement of contractors camp</li> </ul>	<ul style="list-style-type: none"> <li>• Eskom Environmental Management Policy</li> <li>• Eskom Environmental Management Programme</li> </ul>	Eskom

Aspect	Impact	Mitigation Measures	Performance Criteria	Responsibility Party
		<p>to minimise the intensity of compaction due to the susceptibility of these soils to prolonged waterlogging conditions (inundation)</p> <ul style="list-style-type: none"> <li>Disturbed soils can be lightly ripped to at least 25 cm bgs to alleviate compaction prior to re-vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>Eskom Vegetation Management Guidelines</li> </ul>	
<b>Activity:</b> Incidental spills and/or leaks of potentially hazardous substances				
<b>Soils</b>	Impact S3: Soil contamination	<ul style="list-style-type: none"> <li>Eskom's spill prevention and emergency spill response plan, as well as dust suppression, and fire prevention plans will be implemented during the construction phase</li> <li>An Eskom emergency response contingency plan will be implemented to address clean-up measures should a spill and/or a leak occur</li> <li>Spill kits will be provided for onsite spill clearing</li> <li>All potential contaminants and hazardous substances (e.g. hydrocarbons, cement, waste collection and storage areas etc.) will be located on bunded areas to capture and spills and leaks</li> <li>Waste associated with construction phase activities will be stored and removed as per Eskom Environmental Management Policy and Environmental Management Programme.</li> </ul>	<ul style="list-style-type: none"> <li>Eskom Environmental Management Policy</li> <li>Eskom Environmental Management Programme</li> <li>Eskom Vegetation Management Guidelines</li> </ul>	Eskom
<b>Activity:</b> Vegetation clearance and associated physical construction activities				
<b>Land Capability</b>	Impact L1: Loss of agricultural land capability	<ul style="list-style-type: none"> <li>Vegetation should be cleared only within areas of construction and not along the power line route</li> <li>Restrict all intrusive surface disturbance to the localized vicinity of the power line support towers as far as practically possible in order to allow the prevailing land uses to continue with their operations, where feasible</li> </ul>	<ul style="list-style-type: none"> <li>Eskom Environmental Management Policy</li> <li>Eskom Environmental Management Programme</li> </ul>	Eskom

Aspect	Impact	Mitigation Measures	Performance Criteria	Responsibility Party
		<ul style="list-style-type: none"> <li>• Disturbed soils can be lightly ripped to at least 30 cm to alleviate soil compaction and subsequently re-vegetated with indigenous grass to alleviate soil compaction and minimize erosion</li> <li>• Leaseses along the power line route need to notified at minimum six months prior to commencement of construction</li> <li>• A dedicated communication channel will be established by Eskom to ensure a clear line of communication between Eskom and land users</li> <li>• The recommended ripping and re-vegetation can be implemented concurrently in 3-5km km intervals on the subsections where construction works are complete.</li> </ul>	<ul style="list-style-type: none"> <li>• Eskom Vegetation Management Guidelines</li> </ul>	
<b>Activity:</b> Clearing wetland vegetation along power line for the construction of the pylons and servitude along the route				
<b>Wetlands</b>	Impact W1: Loss and disturbance of wetland habitat due to clearing of vegetation along the power line route	<ul style="list-style-type: none"> <li>• Vegetation clearing will be kept to the absolute minimum servitude required for safe operation of the power line</li> <li>• Vegetation clearing will be limited to removal of alien trees and mowing of grass and reeds</li> <li>• Complete removal of vegetation will be avoided, except in direct excavation footprints</li> <li>• No driving through wetland/stream channels and saturated soils unless existing crossings are utilised.</li> <li>• Access routes to the power line servitude will make use of existing roads and farm tracks as far as possible</li> <li>• Where new access tracks into wetlands will be made, the shortest possible route through the wetland will be followed and ideally run perpendicular to the direction of flow in the wetland. Where ruts are</li> </ul>	<ul style="list-style-type: none"> <li>• Eskom Environmental Management Policy</li> <li>• Eskom Environmental Management Systems Policy</li> <li>• Eskom Environmental Impact Assessment Policy</li> <li>• Eskom Environmental Management Programme</li> <li>• Eskom Transmission Environmental Impact Procedure</li> </ul>	Eskom

Aspect	Impact	Mitigation Measures	Performance Criteria	Responsibility Party
		<p>created these will be rehabilitated to prevent formation of preferential flow paths</p> <ul style="list-style-type: none"> <li>• All alien invasive tree species will be removed from the power line servitude, with follow-up treatment/clearing to ensure clearing is successful</li> <li>• Surface runoff along the access routes will not lead to erosion</li> <li>• Prior to the commencement of any excavations, the required disturbance footprint will be demarcated and all activities will be located within the demarcated area. No vegetation disturbance to take place outside the demarcated area</li> <li>• On completion of construction at each pylon the site will be left clean and free from all debris, hydrocarbons and waste, and all excavations filled appropriately</li> <li>• All excavations on site will be fully backfilled. Material to be replaced in excavation in correct order, i.e. material excavated from the bottom of the excavation will be placed at the bottom and topsoil must be placed on surface. No subsoil to be placed on surface.</li> </ul>		
<b>Activity:</b> Construction camp establishment				
<b>Wetlands</b>	Impact W2: Loss and disturbance of wetland habitats due to construction camp establishment	<ul style="list-style-type: none"> <li>• All construction camps will be located outside delineated wetland areas and a minimum distance of 100m from delineated wetland areas, ideally on previously disturbed areas</li> <li>• Vegetation clearing will be kept to the absolute minimum area required for the construction camp/camps.</li> <li>• Where possible, grass cover will be maintained within the construction camp/camps</li> </ul>	<ul style="list-style-type: none"> <li>• Eskom Environmental Management Policy</li> <li>• Eskom Environmental Management Systems Policy</li> </ul>	Eskom

Aspect	Impact	Mitigation Measures	Performance Criteria	Responsibility Party
		<ul style="list-style-type: none"> <li>• A stormwater management plan which incorporates sediment controls will be developed and implemented for each construction camp. Stormwater to be discharged in an environmentally sensitive manner, ideally into a well-vegetated area</li> <li>• All potential contaminants and hazardous substances (e.g. hydrocarbons, cement, waste collection and storage areas etc.) will be located on bunded areas to capture and spills and leaks</li> <li>• Institute environmental best practice guidelines as per the DWA Integrated Environmental Management Series for Construction Activities</li> <li>• No hunting or setting of traps/snares will be allowed in adjacent wetland areas</li> <li>• The construction camp footprint will be fully rehabilitated following completion of construction activities. All waste and contaminated material will be removed from site, soil compaction will be alleviated and the footprint re-vegetated with locally occurring indigenous grass species.</li> </ul>	<ul style="list-style-type: none"> <li>• Eskom Environmental Impact Assessment Policy</li> <li>• Eskom Environmental Management Programme</li> <li>• Eskom Transmission Environmental Impact Procedure</li> </ul>	
<b>Activity:</b> Undertake concrete work				
<b>Wetlands</b>	Impact W3: Loss and disturbance of wetland habitats due to increased sediment transport into wetlands	<ul style="list-style-type: none"> <li>• Institute environmental best practice guidelines as per the DWA Integrated Environmental Management Series for Construction Activities</li> <li>• Dispose of all soil contaminated due to concrete mixing and use as per Eskom Environmental Management Policy and Environmental Management Programme</li> <li>• Waste will be stored on site in clearly marked containers in a demarcated area. All waste must be disposed of offsite.</li> </ul>	<ul style="list-style-type: none"> <li>• Eskom Environmental Management Policy</li> <li>• Eskom Environmental Management Systems Policy</li> <li>• Eskom Environmental Impact Assessment Policy</li> </ul>	Eskom

Aspect	Impact	Mitigation Measures	Performance Criteria	Responsibility Party
			<ul style="list-style-type: none"> <li>• Eskom Environmental Management Programme</li> <li>• Eskom Transmission Environmental Impact Procedure</li> </ul>	
<b>Activity:</b> String transmission cables				
<b>Wetlands</b>	Impact W4: Loss and disturbance of wetland habitats due to stringing transmission cables	<ul style="list-style-type: none"> <li>• Existing access routes and disturbed areas will be utilised as far as possible to access pylon locations. Where no existing tracks are available, a single access track to each pylon location should be used</li> <li>• Access tracks through wetland areas should ideally run parallel to the contour to limit the formation of preferential flow paths that could lead to erosion. Accessing pylon locations along routes perpendicular to the contour should be avoided, unless along existing tracks</li> <li>• Surface runoff along the access routes should not lead to erosion. Where ruts have formed and remain following completion of construction activities, these will be plugged with regular shallow soil berms to prevent a preferential flow paths forming along the vehicle ruts</li> <li>• Stringing locations should be outside delineated wetland areas if at all possible</li> <li>• No driving through wetland/stream channels unless existing crossings are utilised</li> <li>• No driving through saturated soils.</li> </ul>	<ul style="list-style-type: none"> <li>• Eskom Environmental Management Policy</li> <li>• Eskom Environmental Management Systems Policy</li> <li>• Eskom Environmental Impact Assessment Policy</li> <li>• Eskom Environmental Management Programme</li> <li>• Eskom Transmission Environmental Impact Procedure</li> </ul>	Eskom

Aspect	Impact	Mitigation Measures	Performance Criteria	Responsibility Party
<b>Activity:</b> Construction vehicles onsite during the construction of new power line				
<b>Traffic</b>	Impact T1: Increased generation of traffic on existing road network	<ul style="list-style-type: none"> <li>The speed limit will be 40km/h on all roads running through and accessing the study area</li> <li>Construction vehicles will be restricted to travel only on designated roadways</li> <li>Appropriate road signage will be erected during the construction phase</li> <li>Transportation of abnormal loads as per Eskom's Traffic Management Plan</li> <li>Construction vehicles will only operate during daytime hours.</li> </ul>	<ul style="list-style-type: none"> <li>Eskom Environmental Management Policy</li> <li>Eskom Environmental Management Systems Policy</li> <li>Eskom Environmental Impact Assessment Policy</li> <li>Eskom Traffic Management Plan</li> </ul>	Eskom
<b>Surface Water:</b> No impacts expected during the pre-construction and construction phase of the proposed power line. Impacts that are associated with water course channel disturbance is included under the wetlands impacts (See Section 7.3.4)				
<b>Groundwater:</b> No impacts expected during the pre-construction and construction phase of the proposed power line				
<b>Activity:</b> Construction vehicles and activities onsite during the construction of new power line				
<b>Noise</b>	Impact N1: General rise in the ambient noise levels caused by construction vehicles and activities	<ul style="list-style-type: none"> <li>The speed limit will be 40km/h on all roads running through and accessing the study area</li> <li>Contractor camp will be located at least 500m from the nearest community</li> <li>Equipment/ machinery to be used must comply with manufacturers specifications acceptable noise levels;</li> <li>Ensure high level of equipment maintenance, especially intake and exhaust mufflers</li> </ul>	<ul style="list-style-type: none"> <li>Eskom Environmental Management Policy</li> <li>Eskom Environmental Management Systems Policy</li> <li>Eskom Environmental Impact Assessment Policy</li> </ul>	Eskom



Aspect	Impact	Mitigation Measures	Performance Criteria	Responsibility Party
		<ul style="list-style-type: none"> <li>• Maintain a complaints and grievance register and act promptly to complaints regarding noise</li> <li>• Construction vehicles will be restricted to travel only on designated of the proposed development</li> <li>• Construction vehicles and activities will only operate during daytime hours.</li> </ul>	<ul style="list-style-type: none"> <li>• Eskom Environmental Management Programme</li> <li>• Eskom Transmission Environmental Impact Procedure</li> <li>• SANS Noise Guidelines</li> </ul>	
<p><b>Visual:</b> No impacts expected during the pre-construction and construction phase of the proposed power line, as the proposed new power line will be erected in a brownfields area with expensive mining and agricultural activities.</p>				
<p><b>Activity:</b> Site clearing</p>				
<b>Heritage</b>	Impact H1: Possible archaeological and/or historical sites, features or artefacts that could be found during site clearing	<p>In the event that historical features are found during the construction phase, a Chance Find Procedure should be followed:</p> <ul style="list-style-type: none"> <li>• Upon finding any archaeological or historical material all work at the affected area must cease</li> <li>• The area will be demarcated in order to prevent any further work there until an investigation has been completed</li> <li>• An archaeologist will be contacted immediately to provide advice on the matter.</li> <li>• Should it be a minor issue, the archaeologist will decide on future action, which could include adapting the HIA or not. Depending on the nature of the find, it may include a site visit</li> <li>• SAHRA's APM Unit will be notified</li> <li>• If needed, the necessary permit will be applied for with SAHRA. This will be done in conjunction with the appointed archaeologist</li> </ul>	<ul style="list-style-type: none"> <li>• Chance Find Procedure</li> <li>• Eskom Environmental Management Policy</li> <li>• Eskom Environmental Management Systems Policy</li> <li>• Eskom Environmental Management Programme</li> </ul>	Eskom

Aspect	Impact	Mitigation Measures	Performance Criteria	Responsibility Party
		<ul style="list-style-type: none"> <li>The removal of such archaeological material will be done by the archaeologist in lieu of the approval given by SAHRA, including any conditions stipulated by the latter</li> <li>Work on site will only continue after removal of the archaeological/historical material was done</li> <li>Operating controls and monitoring will be aimed at the possible unearthing of such features. Care should therefore be taken when development commences that if any of these are discovered, a qualified archaeologist be called in to investigate the occurrence</li> </ul>		
<b>Social</b>	Impact S1: Loss of land for servitude use and agricultural production	<ul style="list-style-type: none"> <li>The loss of land for servitude and production is address under the land capability section 7.3.3</li> </ul>	<ul style="list-style-type: none"> <li>Eskom Social Plan</li> </ul>	Eskom
<b>Activity:</b> Construction of power line				
<b>Social</b>	Impact S2: Perceptions around job creation, increased expectations around employment opportunities	<ul style="list-style-type: none"> <li>Management of employment expectations through distribution of appropriate and timely information</li> <li>Communication with community and job-seekers regarding actual project start dates and available job opportunities</li> <li>Undertake a skills assessment of the local area to ascertain the employability of locals</li> <li>Do not employ at the contractor camps, ensure there is an employment procedure in place and known to work seekers</li> <li>Adhere to Eskom's employment standards regarding the employment of local versus regional workers; and</li> <li>Ensure that contractors adhere to Eskom employment standards.</li> </ul>	<ul style="list-style-type: none"> <li>Eskom Social Plan</li> </ul>	Eskom

Aspect	Impact	Mitigation Measures	Performance Criteria	Responsibility Party
<b>Activity:</b> Relocation of the power line				
<b>Social</b>	Impact S3: Improved national power supply services	<ul style="list-style-type: none"> <li>• Undertake civil and mining geotechnical assessment and associated specialist studies to determine the most appropriate route to prevent impacts on the proposed power route due to subsidence</li> <li>• Undertake regular inspections and maintenance along the route</li> <li>• Relocate the power line</li> </ul>	<ul style="list-style-type: none"> <li>• Eskom Social Plan</li> <li>• Resettlement Action Plan</li> </ul>	Eskom
<b>Activity:</b> Relocation of three households adjacent to Clewer				
	Impact S4: Permanent loss of land and land linked livelihoods along the proposed power line	<ul style="list-style-type: none"> <li>• Clarify compensation rules that apply to land and subsistence farming within the power line servitude and communicate these measures to the affected households</li> <li>• Undertake and implement appropriate compensation and livelihoods restoration (where necessary) under a Resettlement Action Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Eskom Social Plan</li> <li>• Resettlement Action Plan</li> </ul>	Eskom

**Table 1-2: Operational Phase of the proposed power line**

Aspect	Impact	Mitigation Measures	Performance Criteria	Responsibility Party
<b>Topography:</b> No impacts expected during the operational and maintenance phases of the proposed power line				
<b>Activity:</b> Operation and maintenance of new power line. Switching the line on, operation of new power line and undertake line inspections				
<b>Biodiversity</b>	Impact B2: Loss of faunal and floral habitat, diversity and SCC	<ul style="list-style-type: none"> <li>• Vegetation clearing must be kept to the absolute minimum servitude required for safe operation of the power line</li> <li>• Proliferation of alien and invasive species is expected within any disturbed areas. These species will be controlled by the implementation of the appropriate measures included in Eskom's Transmission Vegetation Management Guideline for the eradication of alien and invasive species</li> <li>• Complete removal of vegetation must be avoided</li> <li>• No driving through wetland/stream channels unless existing crossings are utilised</li> <li>• Install appropriate bird flappers and identified locations along the power line</li> <li>• Periodic walk down of the power line to inspect the route for any possible avifaunal casualties</li> <li>• When any casualties are observed, a qualified avifaunal specialist must be contacted to assist with the placement of suitable and/or additional bird flappers on the power line</li> <li>• The speed limit will be 40km/h on all roads running through and accessing the study area, to minimise the risk of vehicle collisions with faunal species</li> </ul>	<ul style="list-style-type: none"> <li>• Eskom Environmental Management Policy</li> <li>• Eskom Environmental Management Systems Policy</li> <li>• Eskom Environmental Impact Assessment Policy</li> <li>• Eskom Environmental Management Programme</li> <li>• Eskom Transmission Bird Perch Guidelines,</li> <li>• Eskom Bird Nesting Guidelines</li> <li>• Eskom Transmission Vegetation Management Guidelines</li> </ul>	Eskom

Aspect	Impact	Mitigation Measures	Performance Criteria	Responsibility Party
		<ul style="list-style-type: none"> <li>Maintenance vehicles will be restricted to travel only on designated roadways to limit the ecological footprint of the proposed development.</li> </ul>		
<b>Activity:</b> Electrical power transmission				
<b>Soils and Land Capability</b>	Impact S4: Residual land capability losses	<ul style="list-style-type: none"> <li>As agricultural activities will continue in the localized vicinity of the power line, machinery should be operated with caution</li> <li>During maintenance activities restrict all intrusive surface disturbance to the localized vicinity of the power line support towers as far as practically possible in order to allow the prevailing land uses to continue with their operations, where feasible</li> <li>Disturbed soils can be lightly ripped to at least 30 cm to alleviate soil compaction and subsequently re-vegetated with indigenous grass to alleviate soil compaction and minimize erosion.</li> </ul>	<ul style="list-style-type: none"> <li>Eskom Environmental Management Policy</li> <li>Eskom Environmental Management Programme</li> <li>Eskom Vegetation Management Guidelines</li> </ul>	Eskom
<b>Activity:</b> Undertake line inspections (twice per year)				
<b>Wetlands</b>	Impact W5: Wetland degradation as result of line inspections	<ul style="list-style-type: none"> <li>Vegetation clearing must be kept to the absolute minimum servitude required for safe operation of the power line</li> <li>Vegetation clearing must be limited to removal of alien trees and mowing of grass and reeds. Complete removal of vegetation must be avoided</li> <li>No driving through wetland/stream channels unless existing crossings are utilised</li> <li>Existing access routes and disturbed areas identified during the construction phase will be utilised as far as possible to access power line route.</li> </ul>	<ul style="list-style-type: none"> <li>Eskom Environmental Management Policy</li> <li>Eskom Environmental Management Systems Policy</li> <li>Eskom Environmental Impact Assessment Policy</li> <li>Eskom Environmental Management Programme</li> </ul>	Eskom

Aspect	Impact	Mitigation Measures	Performance Criteria	Responsibility Party
			<ul style="list-style-type: none"> <li>Eskom Transmission Environmental Impact Procedure</li> </ul>	
<b>Air Quality:</b> No impacts expected during the operational and maintenance phases of the proposed power line				
<b>Traffic:</b> No impacts expected during the operational and maintenance phases of the proposed power line as line inspections will only be annual or bi- annually				
<b>Surface water:</b> No impacts expected during the operational and maintenance phases of the proposed power line.				
<b>Groundwater:</b> No impacts expected during the operational and maintenance phases of the proposed power line				
<b>Noise:</b> No impacts expected during the operational and maintenance phases of the proposed power line				
<b>Visual:</b> No impacts expected during the operational and maintenance phases of the proposed power line as the proposed new power line will be erected in a brownfields area with expensive mining and agricultural activities				
<b>Heritage:</b> No impacts expected during the operational and maintenance phases of the proposed power line				
<b>Socio economic:</b> No impacts expected during the operational and maintenance phases of the proposed power line and residual land capability losses are addressed in Section 7.6.4				

**Table 1-3: Decommissioning Phase of the proposed power line**

Aspect	Impact	Mitigation Measures	Performance Criteria	Responsibility Party
<b>Topography:</b> No impacts expected during the decommissioning phase of the proposed power line				
<b>Activity:</b> Demolishing of all surface infrastructure in accordance with Eskom's decommissioning plan for transmission lines including provision for the dismantling of the towers and the disposal or recycling of the material				
<b>Biodiversity</b>	Impact B4: Habitat loss due to inappropriate demolition practices, inefficient rehabilitation of disturbed areas	<ul style="list-style-type: none"> <li>• Footprint areas of demolition activities and appropriate mitigation measures to address sinkholes must be kept as small as possible</li> <li>• Rehabilitation of disturbed areas must be implemented and grass seeds of species indigenous to the area must be used</li> <li>• Monitoring and control of Alien Invasive Plant (AIP) must be done during the decommissioning and closure phase</li> <li>• Disturbed areas caused during the demolition activities need to be ripped and rehabilitated and seeded with grass seeds indigenous to the area</li> <li>• Care must be taken when rehabilitation activities need to be performed within wetlands and associated buffer zones as these areas are sensitive and manual labor needs to be the preferred option</li> </ul>	<ul style="list-style-type: none"> <li>• Eskom Environmental Management Policy</li> <li>• Eskom Environmental Management Systems Policy</li> <li>• Eskom Environmental Impact Assessment Policy</li> <li>• Eskom Environmental Management Programme</li> <li>• Eskom Transmission Bird Perch Guidelines,</li> <li>• Eskom Bird Nesting Guidelines</li> <li>• Eskom Transmission Vegetation Management Guidelines</li> </ul>	Eskom

Aspect	Impact	Mitigation Measures	Performance Criteria	Responsibility Party
<b>Activity:</b> Decommissioning of existing power line infrastructure				
<b>Soils and Land Capability</b>	Impact L2: Land capability loss	<ul style="list-style-type: none"> <li>• Efforts should be made to reclaim all the infrastructure materials as soon as they are no longer in use, to prevent accumulated impacts</li> <li>• Electrical power must be safely disconnected immediately once the power line infrastructure is no longer in use, prior to decommissioning</li> <li>• Burying of waste should be strictly prohibited, and all waste should be managed in accordance with the relevant legislative requirements</li> <li>• All non-hazardous solid waste should be collected for recycling and/or disposal at an approved landfill</li> <li>• Records of waste disposal certificates should be securely filed for compliance monitoring</li> <li>• Undertake sinkhole remediation prior to the decommissioning of the existing power line.</li> </ul>	<ul style="list-style-type: none"> <li>• Eskom Environmental Management Policy</li> <li>• Eskom Environmental Management Programme</li> <li>• Eskom Vegetation Management Guidelines</li> </ul>	Eskom
<b>Activity:</b> Removal of all infrastructure				
<b>Wetlands</b>	Impact W6: Degradation of wetlands due to the decommissioning of the existing power line	<ul style="list-style-type: none"> <li>• Existing access routes and disturbed areas should be utilised as far as possible to access pylon locations</li> <li>• Access tracks through wetland areas should ideally run parallel to the contour to limit the formation of preferential flow paths that could lead to erosion. Accessing pylon locations along routes perpendicular to the contour should be avoided, unless along existing tracks.</li> <li>• Surface runoff along the access routes should not lead to erosion. Where ruts have formed and remain following completion of</li> </ul>	<ul style="list-style-type: none"> <li>• Eskom Environmental Management Policy</li> <li>• Eskom Environmental Management Systems Policy</li> <li>• Eskom Environmental Impact Assessment Policy</li> </ul>	Eskom



Aspect	Impact	Mitigation Measures	Performance Criteria	Responsibility Party
		<p>decommissioning activities, these should be plugged with regular shallow soil berms to prevent a preferential flow paths forming along the vehicle ruts</p> <ul style="list-style-type: none"> <li>• On completion of decommissioning at each pylon the site should be left clean and free from all debris, hydrocarbons and waste, and all excavations filled appropriately</li> <li>• All disturbance footprints associated with the pylon footings and access roads on site must be fully rehabilitated following decommissioning. This should include removal of all waste and contaminated material from site, soil compaction must be alleviated and the footprint landscaped to the surrounding landscape profile and re-vegetated with locally occurring indigenous grass species</li> <li>• Undertake decommissioning activities in the dry season as far as possible.</li> </ul>	<ul style="list-style-type: none"> <li>• Eskom Environmental Management Programme</li> <li>• Eskom Transmission Environmental Impact Procedure</li> </ul>	
<b>Air quality:</b> No impacts expected during the decommissioning phase of the proposed power line				
<b>Traffic:</b> No impacts expected during the decommissioning phase of the proposed power line				
<b>Surface water:</b> No impacts expected during the decommissioning phase of the proposed power line				
<b>Groundwater:</b> No impacts expected during the decommissioning phase of the proposed power line				
<b>Noise:</b> No impacts expected during the decommissioning phase of the proposed power line				
<b>Visual:</b> No impacts expected during the decommissioning phase of the proposed power line as the proposed new power line will be erected in a brownfields area with expensive mining and agricultural activities				
<b>Heritage:</b> No impacts expected during the decommissioning phase of the proposed power line				

<b>Aspect</b>	<b>Impact</b>	<b>Mitigation Measures</b>	<b>Performance Criteria</b>	<b>Responsibility Party</b>
<b>Socio – economic:</b> No impacts expected during the operational and maintenance phases of the proposed power line and residual land capability losses are addressed in Section 7.6.4				

## 1.3 Environmental Monitoring

With the construction of the power line route, the following environmental monitoring is encouraged. In addition, any Eskom environmental monitoring will be implemented.

### Wetlands

It is recommended that monitoring of all wetland crossing be undertaken immediately following the completion of construction activities, and then again 12 months after the completion of construction activities. Monitoring of wetland crossings should be undertaken by an independent wetland/aquatic ecologist in the form of a walk-down survey along the power line route. The following monitoring activities should be undertaken:

- A fixed point photographic record of each wetland crossing should be compiled
- Visual observations for signs of erosion and channel incision. Erosion features should be marked via GPS co-ordinates and measures (e.g. width and depth of erosion gullies and channels)
- Visual observations of vegetation cover and structure with a view to evaluating successful re-establishment of natural vegetation cover
- Observations of alien invasive species occurrence. Locations where alien invasive species are observed should be marked via GPS co-ordinates and basic characteristics of invasion noted (e.g. species, age, number of individuals/area covered etc.)

Following the completion of a monitoring event, the independent wetland/aquatic ecologist should recommend the need or not for rehabilitation activities and corrective actions required

Following the completion of the second monitoring event (12 months after construction), the independent wetland/aquatic ecologist should recommend the need or not for further monitoring.

## 1.4 Environmental Awareness Plan

The Environmental Awareness Plan developed for Eskom describes the manner in which the company intends informing its employees of any environmental risks which may result from their work and the manner in which the risk must be dealt with to avoid pollution or degradation of the environment. Eskom recognises that this needs to be broadened to capture social requirements.

Environmental conditions are included in any operational contracts, thereby making Contractors aware of the potential environmental risks associated with the project and the necessity to prevent accidental spillages by the implementation of good housekeeping practices.

The following principles should apply to safety, health and environmental (SHE) training:

- All personnel as a minimum undergo general SHE induction and awareness training
- An ESMS coordinator has been appointed
- The ESMS coordinator should identify the SHE training requirements for all Eskom personnel and Contractors. The training requirements are recorded in a training needs matrix indicating particular training that must be undertaken by identified personnel and Contractors
- The training matrix is administered by the Environmental Co-ordinator.

### 1.4.1 Awareness

General awareness training should be conducted as follows:

- Everyone should undergo induction on entry, which should, to incorporate environmental awareness training. At the end of this training, personnel should be required to complete the competency test and the level of competency assessed by the Training Department. Re-testing or induction will be undertaken during inspections and/or audits and/or as necessary and renewed on an annual basis
- Evaluation of competency training, where required, should be carried out through tests and questionnaires for employees

- All personnel performing tasks, which can cause significant or major environmental impacts, should be competent on the basis of training, education and/or experience. This applies to, but is not limited to, supervisor level and above.

In addition to the above environmental awareness, environmental issues should be addressed as follows:

- Induction on environmental issues for all employees starting to work on the project
- Annual induction for all employees
- Monthly environmental topics should be generated to raise awareness of employees on environmental issues.

### 1.4.2 Training

Training of contractors and staff is essential for the project. Key consideration include:

- Awareness training must include the potential consequences of departure from specified operating procedures as well as significant environmental impacts, actual or potential, of their work activities
- Training should be appropriate to the activity of individual employees

### 1.4.3 Auditing and reporting

The EMP performance assessment (audit) must be undertaken at a maximum of every five years by an external auditor, and a report must be compiled and submitted to the competent authority. In addition Eskom's auditing protocol will be implemented.

## 2 Conclusions and Recommendations

### 2.1 Conditions of Environmental Authorisation

The following conditions should be included in the environmental authorisation for the power line project:

- To ensure compliance with, and implementation of the EMP by:
  - Appointing of a suitably qualified individual to oversee implementation of the EMP during all phases of the project
  - Appointing a suitably qualified Environmental Control Officer/Superintendent to undertake audits on a regular basis throughout the construction phase
- To ensure that all staff, contractors and sub-contractors are aware of and understand the requirements of the EMP and environmental issues in relation to their individual areas of work by:
  - Developing an induction and training program covering the EMP, environmental awareness, dealing with environmental incidents and waste management
  - Advising staff commissioned during pre-construction and construction, including sub-contractors, of EMP requirements through the induction program as well as on notice boards at the contractor's camps during construction. These notice boards should cover the EMP, environmental awareness, dealing with emergencies and waste management
  - Implementing an Environmental Emergency preparedness procedure and the non-conformance and compiling the corrective action procedure for the power line project. This is to be implemented in emergency situations such as Oil or fuel leaks and spills, fires, sewage spillage. The Emergency preparedness procedure must include requirements to contact the Environmental Coordinator following an emergency or incident
  - Potential impacts identified should be monitored during all phases of the power line project. Maintenance of the transmission line will form an important aspect of the operations. Management measures will be amended to address the impacts if analysis of monitoring trends indicates this may be necessary. Monitoring of the operations, in accordance with their

- operating plans and protocols, will also form an important activity to ensure their long-term sustainability
  - Care should be taken with the choice of herbicide to ensure that no additional impact and loss of indigenous plant species occurs due to the herbicide used
  - Demarcate all sensitive floral habitat areas and ensure that these areas are off-limits to construction, operational vehicles and all personnel.
- As it is almost impossible to locate all the cultural resources in a given area, the following chance find procedure must be adhered to, should a heritage site be uncovered:
  - Stop all work on site
  - Demarcate area so that access is restricted for contractors and the general public
  - Contact heritage specialist to assess the site
  - Document the following:
    - Photograph of find
    - GPS coordinates
    - Basic description (eg graves, stone walling, stone tools)
    - If graves, try to include number of graves as well as oldest and youngest date of death indicated
  - Await feedback from heritage specialist and SAHRA prior to commencing with activities.
- A GA application for the proposed power line was submitted on 31 May 2017 and approval from DWS was granted on 4 July 2017.
- Ensure that all hazardous storage containers and storage areas comply with the relevant SABS standards to prevent leakage. Regularly inspect all vehicles for leaks
- Eskom would like to request, should DEA grant the proposed project a positive environmental authorisation that the environmental authorisation be valid for a five years.

#### **Wetlands:**

- Based on the outcomes of the wetlands study, specifically considering the existing disturbances impacting n many of the wetlands in the area and resulting in the moderately to largely modified condition of the affected wetlands, together with the fact that expected impacts can be mitigated to Low significance, it is our considered opinion that the proposed relocation of the power line as detailed in this report could be authorised from a wetland perspective. Should authorisation be granted, the following conditions should however apply:
  - The construction camps must be located outside delineated wetland areas and a minimum distance of 100m from delineated wetland areas, preferably on previously disturbed areas
  - The mitigation measures detailed in this wetland report must be included in the EMP and must be fully implemented on site.

## **2.2 EAP oath**

I, Beth Candy, declare that

- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report

- I will ensure that the plan of study for undertaking the environmental impact assessment will be clearly communicated with the interested and affected parties to ensure that everyone involved is aware and in agreement in terms of the plan of study.

Signature of the environmental assessment practitioner:

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Beth Candy

Name of company: SRK Consulting (South Africa) (Pty) Ltd

Date: 20 July 2017

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Natasha Anamuthoo

Senior Environmental Scientist

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Project Reviewer

All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

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Relocation EIA/ EMP

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