

ENVIRONMENTAL MANAGEMENT PLAN



Environmental Management Plan for:

Rouxville-Zastron 33kV powerline project-
NW-STM-1606-2731-00004

By:

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A handwritten signature in black ink, appearing to read "M. Moeng", with a stylized flourish at the end.

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1. Introduction

As part of Eskom's strategy to protect the environment through the sustainable management of its activities, it is required that an Environmental Management System (EMS) be developed and implemented. Part and parcel of the EMS is the development and implementation of environmental management programmes (EMPs) according to EPC 32-248. These programmes are essentially plans of action which outline how activities that have the potential to have negative impacts on the environment will be managed and monitored as well as how areas that were affected will be rehabilitated.

This particular Environmental Management Plan (EMP) is aimed at identifying negative environmental activities and any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified with regards to activities associated with the 33kV powerline between Rouxville substation and Zastron substation.

Recommendations are made on management and monitoring of such activities in order to "maximise the benefit and minimise the damage" to the environment. The content of this document will also outline the monitoring and management recommendations related to the life cycle of the project's activities in order to ensure that minimal environmental damage is caused and where possible avoid any negative impacts.

2. Terms of Reference

An EMP must be carried out in terms of the relevant line division's Environmental Management System. This is applicable to all of Eskom's future and present servitudes as well as to projects for which an environmental impact assessment (EIA) or environmental screening was done.

This particular Environmental Management Plan (EMP) is aimed at identifying negative environmental activities and any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified with regards to activities associated with the above mentioned requirements, an EMP has to be developed for the 33kV power line project will be built between Rouxville substation and Zastron substation.

3. Scope of work

This EMP is developed in consideration to the following activities outlined in the scope of work as follows:

- Build 34km of Chickadee line at 33kV insulation level from the Rouxville Substation to the Bophelo Proposed Substation Site to de-load the existing Rouxville-Zastron 22kV (RVZ) rural line.
- Construct 2.9km 22kV Hare line from Bophelo Substation Proposed Site to Zastron substation to deload RVZ line of the Zastron Substation.
- Install air termination devices with modified bonding based on pilot site registered on chickadee section of line.
- Install spark gap devices on suspension structures on Hare section of line.
- Construct 33kV Hare transfer bar at Rouxville sub and install 33kV load break switch
- Install 22kV load break switch (normally closed point) at Zastron Substation, operate RVZ222-6 as normally open point.
- The new line to be abbreviated RVZT
- Install 40 servitude gates along the new line route at positions confirmed with the CNC
- Install vibration dampers at all spans > 180m
- Install bird-flappers as specified in detail design specification.
- Soil nominations are mandatory for all structures.

4. Geographical overview of power line route

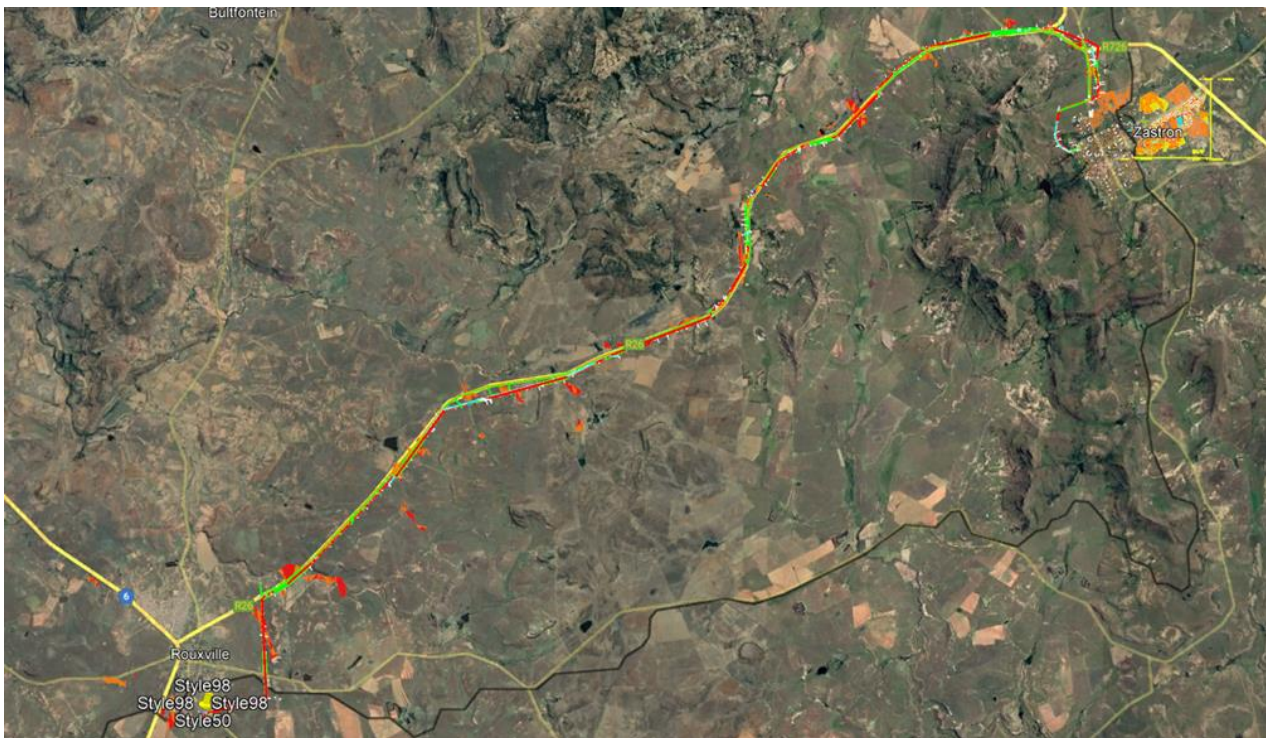


Figure 1: Geographical overview of power line route

5. General Information

5.1 Definitions

In this EMPr any word or expression to which a meaning has been assigned in the National Environmental Management Act 107 of 1998 has that meaning unless the context requires otherwise –

- a) **Clearing** means the clearing and removal of vegetation, whether partially or in whole, including trees and shrubs, as specified;
- b) **Contractor** - The Contractor has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract, are in line with the Environmental Management Programme and that Method Statements are implemented as described.
- c) **Construction camp** is the area designated for key construction infrastructure and services, including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management;
- d) **Method Statement** means a written submission by the Contractor to the Project Manager in response to this EMPr or a request by the Project Manager and Eskom Environmental officer (EEO). The Method Statement must set out the equipment, materials, labour and method(s) the Contractor proposes using to carry out an activity identified by the Project Manager when requesting the Method Statement. This must be done in such detail that the Project Manager and EEO is able to assess whether the Contractor's proposal is in accordance with this specification and/or will produce results in accordance with this specification; all method statements must be in accordance with the EMP
- e) **Hazardous Substances** is a substance governed by the Hazardous Substances Act, 1973 (Act No. 15 of 1973) as well as the Hazardous Chemical and Substances Regulations, 1995
- f) **Slope** means the inclination of a surface expressed as one unit of rise or fall for so many horizontal units;
- g) **Solid waste** means all solid waste, including construction debris, hazardous waste, excess cement/ concrete, wrapping materials, timber, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers)
- h) **Spoil** means excavated material which is unsuitable for use as material in the construction works or is material which is surplus to the requirements of the construction works;
- i) **Topsoil** means a varying depth (150mm-300mm) of the top layer of the soil profile irrespective of the fertility, appearance, structure, agricultural potential and composition of the soil;

6. Roles and Responsibilities for Environmental Management Programme (EMPr) implementation

The effective implementation of this EMPr is dependent on established and clear roles, responsibilities and reporting lines within an institutional framework. This section of the EMPr gives guidance to the various environmental roles and reporting lines.

Table 1: Roles and Responsibilities for EMPr implementation

Function	Role and Responsibilities
Eskom Project Manager (PM)	<p>Role : The Project Manager is accountable for ensuring compliance with the EMPr and any conditions of approval from other environmental permits.</p> <p>Responsibilities :</p> <ul style="list-style-type: none"> - Be fully conversant with the conditions of the environmental documents associated with the project; - Ensure that all contractors involved in the project attend environmental induction); - Ensure that periodic environmental performance audits are undertaken on the project implementation.
Clerk of Works (COW)	<p>Role Oversees site works, liaises with the contractor(s) and the Eskom environmental officer. The COW is responsible for overseeing the day to day implementation of the EMPr and for ensuring the compliance of all contractors with the conditions and requirements stipulated in the EMPr.</p> <p>Responsibilities :</p> <ul style="list-style-type: none"> - Must be fully conversant with the conditions of the EMPr. - Oversees site works, liaison with Contractor, PM and Environmental officers; - Must ensure that all landowners have the relevant contact details of the relevant site staff - Will issue all non-compliances to contractors; and
Eskom Environmental Officer (EEO)	<p>Roles The primary role of the EEO is to act as a quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the EEO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise.</p>

	<p>Responsibilities:</p> <ul style="list-style-type: none"> - required to conduct compliance audits -provides feedback to the Project Manager regarding all environmental matters. -The Contractor, contractor Environmental officer are answerable to the EEO for non- compliance with the Performance Specifications as set out in the EMPr and other environmental permits. -The EEO provides feedback Project Manager on Issues of non-compliance which must be taken up by the Project Manager, and resolved with the Contractor as per the conditions of his contract. -Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; - Undertake regular and comprehensive site inspections / audits of the construction site according to the generic EMPr and applicable licenses in order to monitor compliance as required; - Educate the construction team about the management measures contained in the EMPr and environmental licenses; - Monitoring the performance of the Contractors and ensuring compliance with the EMPr - Liaison between the PM, Contractors and relevant authorities and other lead stakeholders on all environmental concerns; - Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; - Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc) as well as corrective and preventive actions taken; - Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken; - Facilitate training for all personnel on the site – this may range from carrying out the training, to reviewing the training programmes of the Contractor and/or sub-contractors; -In case of non-compliances, the ECO must first communicate this to the Clerk of works and PM, who have the power to ensure this matter is addressed. - Maintenance, update and review of the EMPr; - Communication of all modifications to the EMPr to the relevant stakeholders
Contractor	<p>Role</p> <p>The Contractor appoints the Contractor environmental officer(cEO) and has overall responsibility for ensuring that all work, activities, and actions linked to</p>

	<p>the delivery of the contract are in line with the EMPr and that Method Statements are implemented as described. External contractors must ensure compliance with this EMPr while performing the onsite activities as per their contract with the Project Developer.</p> <p>The contractors are required, where specified, to provide Method Statements setting out in detail how the management actions contained in the EMPr will be implemented during the development</p> <p>Responsibilities:</p> <ul style="list-style-type: none"> - employ a suitably qualified person to monitor and report to the Eskom's environmental officer and PM appointed person on the site activities pertaining to environmental management during the construction period; - ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; - attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; - ensure that contractors' staff (or sub-contractors) repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the EEO
Contractor environmental officer (cEO)	<p>Role</p> <p>Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant.</p> <p>The Contractor must ensure that the Contractor's environmental Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the EEO and the public.</p> <p>The cEO ensures that all Sub-contractors working under the Contractor abide by the requirements of the EMPr. The Contractor is answerable to the Project Manager for all environmental issues associated with the project.</p> <p>Responsibilities:</p> <ul style="list-style-type: none"> - Be on site throughout the duration of the project and be dedicated to the project; - Ensure all their staff are aware of the environmental requirements, conditions and constraints with respect to all of their activities on site; - Implementing the environmental conditions, guidelines and requirements as stipulated within the EMPr and Method Statements; - Attend the Environmental Site Meeting; - Undertaking corrective actions where non-compliances are registered within the stipulated timeframes;

	<ul style="list-style-type: none"> - Report back formally on the completion of corrective actions; - Assist the EEO in maintaining all the environmental site documentation; - Prepare the site inspection reports and corrective action reports for submission to the EEO;
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7. Environmental documentation reporting and compliance management

To ensure accountable and demonstrated implementation of the EMPr, a number of reporting systems, documentation controls and compliance mechanisms must be in place for all overhead electricity transmission and distribution infrastructure projects as a minimum requirement.

7.1 Document control/Filing system

At a minimum, all documentation detailed below will be stored in the Environmental file. A hard copy of all documentation shall be filed, while an electronic copy may be kept where relevant.

The filing system must be updated and relevant documents added as required. The EMPr/environmental file must be made available at all times on request. The Environmental file will form part of any environmental audits undertaken. At a minimum the following documents are required to be included by the contractor in the file:

Table 2: Minimum contents for Environmental file

PERMISSIONS AND AGREEMENTS	
Notification of commencement to landowners	Through ward councillor and municipality where relevant or individual landowners
Permission to use registered land fill site	Proof as letter or email between contractor and municipality/relevant disposal site
Agreement for septic toilet service	Contract/letter of agreement as proof
Permission to use water on the project	Letter or email from municipality/ contract with service provider/ proof of purchase/agreement with landowner where relevant
Contract with supplier to use import soil material (if applicable) together	Contract/ proof of purchase from provider and copy of mining permit of supplier

with valid copy burrow pit mining permit of gravel material supplier	
OPERATIONAL CONTROL DOCUMENTS:	
Eskom EMP and attendance register of training on it	Proof of copy in Environmental file
Contractor EMP and attendance register of training on it	Proof of copy in Environmental file
Waste management plan	Proof of copy in Environmental file
Contractor Environmental emergency procedure	Proof of copy in Environmental file
Contractor construction method statements	Proof of copies in the Project file
MONITORING TOOLS	
Waste disposal register	Proof of copy in Environmental file
Incident register	Proof of copy in Environmental file
Complaints register	Proof of copy in Environmental file
Material Safety Data Sheet (MSDS)	Proof of copy in Environmental file
PROOF OF ENVIRONMENTAL COMPLIANCE	
Proof of waste disposal	Waste slips and waste manifests showing what waste was disposed of, quantities disposed, date and the name/geographic location of disposal , acknowledgement of receipt of waste by representative of disposal facility and date stamped photos as part of records
Proof of toilet waste disposal	Service slips and proof of disposal showing where waste was disposed of, quantities, name/geographic location of disposal facility, acknowledgement of receipt of waste by representative of disposal facility with relevant dates
Copy of registration certificate of disposal facilities used ie proof that it's a legally registered site	Proof that waste is being disposed of at legal registered facility

Vehicle and equipment service books	
Environmental trainings attendance registers	Proof of copies in Environmental file

7.2 Additional documentation to be available on site

The following documents shall also be included in the filing system and be accessible at all times:

- ☐ Copy of the site specific EMPr as well as any amendments thereof;
- ☐ Copy of declaration/commitment of implementing EMPr signed by the contractor representative, Project manager and Eskom Environmental Officer
- ☐ All method statements;
- ☐ Completed environmental checklists;
- ☐ Minutes and attendance register of environmental site meetings;
- ☐ An up-to-date environmental incident log;
- ☐ A copy of all instructions or directives issued;
- ☐ A copy of all corrective actions signed off. The corrective actions must be filed in such a way that a clear reference is made to the non-compliance record;

7.3 Environmental site meetings

Environmental site meetings are sessions that are held between the relevant contractor representatives, Eskom team representatives and chaired by the Eskom environmental officer. The purpose of these meetings is to discuss environmental management matters on the project. These session may be incorporated with the overall project progress meetings where environmental management items are included as part of the meeting agenda to be addressed.

Minutes of these meetings shall be kept. The minutes must include an attendance register and will be attached to the Monthly Report that is distributed to attendees. Each set of minutes must clearly record "Matters for Attention" that will be reviewed at the next meeting.

7.4 Required Method Statements

The method statements will be done in such detail that the Environmental officers are enabled to assess whether the contractor's proposal of activity to be done is in accordance with the EMPr.

The following method statements will be required (as a minimum) and should be in-line with the EMPr to explain how the following activities will be undertaken:

- Site establishment – Camps, Lay-down or storage areas, satellite camps, infrastructure;
- Batch plants (if required);
- Cement mixing and disposal of cement bags
- Handling, transport and storage of Hazardous Chemical Substance's;
- Vegetation management – Protected, clearing, aliens, felling;
- Access management – Roads, gates, crossings etc.;
- Fire plan;
- Waste management – transport, storage, segregation, classification, disposal (all waste streams);
- Social interaction – complaints management, compensation claims, access to properties etc.;
- Water – use (source, abstraction and disposal), access and all related information, crossings and mitigation;
- Emergency preparedness – Spills, training, other environmental emergencies;
- Dust and noise management methodologies;
- Heritage and palaeontology management.

The environmental officers shall ensure that the contractors perform in accordance with these method statements. Completed and authorised method statements shall be kept on file.

7.5 Environmental Incident Log (Diary)

The Contractor environmental officer is required to maintain an up-to-date and current Environmental Incident Log (environmental diary). The Environmental Incident Log is a means to record all environmental incidents and/or all non-compliance.

An *environmental incident* according to the Environmental Incident Management Procedure, 240-133087117 refers to an unplanned event that could or does result in an environmental impact. This can include the following:

- ☐ Any deviation from the listed impact management actions (listed in this EMPr) that may be addressed immediately by the contractor environmental officer. (For example waste bins that do not have lids);
- ☐ Any environmental impact resulting from an action or activity by a contractor in contravention of the environmental stipulations and guidelines listed in the EMPr which as a single event would have a minor impact but which if cumulative and continuous would have a significant effect eg oil spills on site
- ☐ General environmental incidents such as road kills or injured wildlife caused by the activities undertaken as part of the project.
- ☐ An incident where a provision of environmental legislation (national, provincial, or local) and/or condition of an environmental approval (for example, environmental authorisation, water use license, waste licence, licence in terms of any other legislation) or any other legal document issued in terms of environmental legislation is contravened.

The contractor environmental officer and Eskom environmental officer are to record all environmental incidents in the Environmental Incident Log.. The Log is to be kept in the EMPr file and at a minimum the following will be recorded for each environmental incident:

- ☐ The date and time of the incident;
- ☐ Description of the incident;
- ☐ The name of the responsible person;
- ☐ The incident must be listed as significant or minor;
- ☐ If the incident is listed as significant, a non-conformance notice must be issued, and recorded in the log;
- ☐ Remedial or corrective action taken to mitigate the incident; and
- ☐ Record of repeat minor offences by the same contractor or staff member.

7.6 Non-conformances

Non-conformance in the context of this document refers to any deviation from the stipulations in the EMP aimed at preventing, minimising or remedying negative environmental impacts. A non-conformance notice will be issued to the responsible contractor or specific contractor representative by the Eskom environmental officer via the Project Manager. The non-conformance notice will be issued in writing; a copy filed in the EMPr file and will at a minimum include the following:

- ☐ Time and date of the non-conformance;
- ☐ Name of the contractor responsible;
- ☐ Nature and description of the non-conformance;
- ☐ Recommended / required corrective action; and
- ☐ Date by which the corrective action to be completed.
- ☐ The contractors shall act immediately when a notice of non-conformance is received and correct whatever is the cause for the issuing of the notice.

Corrective action records :

For each non-conformance notice issued, a documented corrective action must be recorded. On receiving a non-conformance notice, the contractor's cEO will ensure that the corrective actions required take place within the stipulated timeframe. On completion of the corrective action the cEO is to issue a Corrective Action Report in writing to the Eskom environmental officer. If satisfied that the corrective action has been completed, the Eskom environmental officer is to sign-off on the Corrective Action Report, and attach the report to the non-conformance notice in the EMPr file. A corrective action is considered complete once the report is signed off by the Eskom environmental officer.

7.7 Photographic record

A digital photographic record will be kept. The photographic record will be used to show before, during and post rehabilitation evidence of the project site as well as being used in cases of damages claims if they arise. Each image must be dated and a brief description note attached.

7.8 Complaints register

Complaints received regarding activities on the development site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The contractor environmental officer and Eskom environmental officer should be made aware of any complaints that pertain to environmental matters.

The contractor environmental officer shall keep a current and up-to-date complaints register. The complaints register is to be a record of all complaints received from

communities, stakeholders and individuals. The Complaints Record shall include the following info:

- ☐ Record the name and contact details of the complainant;
- ☐ Record the time and date of the complaint;
- ☐ Contain a detailed description of the complaint;
- ☐ Where relevant and appropriate, contain photographic evidence of the complaint or damage (contractor environmental officers to take relevant photographs); and
- ☐ Contain a copy of the contractor environmental officer written response to each complaint received and keep a record of any further correspondence with the complainant. The contractor environmental officer written response will include a description of any corrective action to be taken and must be signed by the Contractor, Eskom environmental officer, project manager and affected party.

Interactions with affected parties

Open, transparent and good relations with affected landowners, communities and regional staff are an essential aspect to the successful management and mitigation of environmental impacts.

The contractor environmental officer shall:

- ☐ Ensure that all queries, complaints and claims are dealt within an agreed timeframe;
- ☐ Ensure that any or all agreements are documented, signed by all parties and a record of the agreement kept in the EMPr file;
- ☐ Ensure that a contact details or process to follow to lof complaints are made available to all landowners and affected parties; and
- ☐ Ensure that contact with affected parties is courteous at all times;

7.9 Environmental audits

Internal Environmental Audits of the activity and implementation of the EMPr will be undertaken by the Eskom Environmental officer. The findings and outcomes of these audits will be recorded in the EMPr file. The report will be tabled as the key point on the agenda of the Site Meeting. The Report is submitted for acceptance at the meeting and the final report will be circulated to the Project Manager and filed in the EMPr file.

8. Specific conditions and mitigation measures from specialist reports and environmental permits:

8.1 Paleontology/Fossil Finds recommendations

The following is the process to be followed for the monitoring and management pertaining to possible fossils on the project.

FOSSIL CHANCE FIND PROTOCOL

Monitoring Programme for Palaeontology – to commence once the excavations / drilling activities begin.

- When excavations begin the rocks must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (plants, insects, bone, coal) should be put aside in a suitably protected place. This way the project activities will not be interrupted.
- Photographs of similar fossils must be provided to the developer to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones. This information will be built into the EMP's training and awareness plan and procedures.
- Photographs of the putative fossils can be sent to a palaeontologist for a preliminary assessment.
- If there is any possible fossil material found by the developer/environmental officer/contractor then a qualified palaeontologist should visit the site to inspect the selected material and check the dumps where feasible.
- Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits.
- If no good fossil material is recovered then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.
- If no fossils are found and the excavations have finished then no further monitoring is required.

8.2 Archeology sensitivities and mitigation measures

Table 3 indicates the positions of the archeology sites identified. Attention must be given to those given a medium and high ranking as these have specific mitigation measures to be followed indicated in the last column of the table.

In addition to the mitigation measures, the general rule for protection of heritage finds during construction is as follows:

If archaeological or other heritage relics are found during the construction phase, heritage authorities will be advised immediately and a heritage specialist to be called to attend to it. Since archaeological deposits are usually buried underground, **if artefacts or skeletal material are exposed in the area during construction, activities at that location should be halted, and the provincial heritage resources authority or SAHRA notified in order for an investigation and evaluation of the finds to take place.**

Table 3: Heritage features along powerline route and associated mitigation measures

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING	MITIGATION
SFD01	30°14'55.12"S	26°34'8.66"E	Modern	On the farm Groenspruit 516. Wind pump and concrete reservoir.	Low	No action required
SFD02	30°18'41.85"S	26°42'30.70"E	Modern	On the farm Klipplaatdrift 68. A farm gate with short flanking walls of dressed (coursed) sandstone.	Medium B	Avoid disturbance
RXV03	26°42'30.70"E	26°51'14.90"E	Modern	On the farm Dorpscronden van Rouxville 108, eastern outskirts of Rouxville. Remnants of a brick building at an abandoned pump station. Rusted drinking trough.	Low	No action required
RXV04	30°25'19.80"S	26°49'7.70"E	19th/20th C	On the farm Dorpscronden van Rouxville 108, south-western outskirts of Rouxville. Two stone pillars, 80 cm tall, 20 m apart, were used as fencing posts.	Medium B	Avoid disturbance
RXV05	30°25'14.80"S	26°49'4.50"E	19th/20th C	On the farm Dorpscronden van Rouxville 108, on the south-western outskirts of Rouxville. A stone pillar 120 cm long was used as a fencing post	Medium B	Avoid disturbance
RXV06	30°24'2.30"S	26°51'35.70"E	21st C	On the farm Paisley B 1039. A roadside memorial in a rectangular steel palisade, floor of ceramic tiles. Landmark for fatal traffic accident.	Medium B	Avoid disturbance
RXV07	30°21'9.69"S	26°55'39.67"E	Modern	On the farm Kneetkloof 125. Wind pump and concrete reservoir.	Low	No action required

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING	MITIGATION
RXV08	30°17'39.73"S	27° 0'23.82"E	Modern	On the farm Sadowa 331. A small lake. The dam wall is reinforced by dressed (coursed) stonework on the lakeside. Stones of a dark shade used for coursing in middle section of the wall to create a decoration pattern.	Medium B	Will not be affected
RXV09	30°17'47.46"S	27° 0'26.80"E	Modern	On the farm Zevenfontein 254. Wind pump and concrete reservoir.	Low	No action required
ZST10 Corner A	30°16'33.35"S	27° 4'41.61"E	20th C	Burial ground on the northern outskirts of Zastron. It holds 60+ graves. Most of the graves are poorly marked with stones. Some of the names inscribed: Makhoa Anna Moleleki DOB 10-04-1898 DOD 22-08-1980; Mamallao (no dates); Tlatsi (no dates); John Mmane (no dates); Mmane Matankisa (no dates); Mophosi Agness Mahohodi DOB 22-03-1963 DOD 23-01-2008.	High	100 m servitude to be reserved.
Corner B	30°16'32.99"S	27° 4'43.48"E				
Corner C	30°16'35.04"S	27° 4'43.75"E				
Corner D	30°16'35.39"S	27° 4'42.56"E				
ZST11	30°16'57.09"S	27° 1'24.81"E	Modern	On the farm Belfast 513. Two abandoned farm buildings.	Low	No action required
RXV12	30°19'39.57"S	26°59'5.37"E	Modern	On the farm Heningsdale 400. Wind pump and concrete reservoir.	Low	No action required
RXV13	30°20'40.90"S	26°57'24.46"E	Modern	On the farm Umbala 1059. An isolated planting of Eucalyptus is an important landscape feature.	Medium B	Branches may be trimmed, but removal of trees to be avoided

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING	MITIGATION
RXV14	30°21'15.20"S	26°54'57.00"E	19th/20th C	On the farm Fraai Uizicht 322, One stone pillar, 1.6m tall, used as fencing post.	Medium B	Avoid disturbance
RXV15	30°21'17.50"S	26°54'48.60"E	19th/20th C	On the farm Fraai Uitzicht 322, on the south-western outskirts of Rouxville. Four stone pillars of different heights, were used as fencing posts.	Medium B	Avoid disturbance
RXV16	30°21'27.20"S	26°54'22.60"E	19th/20th C	On the farm Uitzicht 322, on the south-western outskirts of Rouxville. Two stone pillars of different heights, were used as fencing posts.	Medium B	Avoid disturbance

SITE NO	COORDINATES		PERIOD
RXV13	30°20'40.90"S	26°57'24.46"E	Modern



DESCRIPTION: On the farm Umbala 1059. An isolated planting of Eucalyptus is an important landscape feature.

HERITAGE SIGNIFICANCE	Association with modern commercial farming.
MITIGATION	Branches may be trimmed, but removal of trees to be avoided.

SITE NO	COORDINATES		PERIOD
RXV06	30°24'2.30"S	26°51'35.70"E	21 st century




DESCRIPTION: On the farm Paisley B 1039. A roadside memorial fenced in a rectangular steel palisade, floor of ceramic tiles.		
HERITAGE SIGNIFICANCE	Road accident memorials in memory of road accident victims	
MITIGATION	Avoid disturbance. Lines should not pass over the memorial.	

8.3 Conditions from the General Water use authorisation

A General water use authorisation was issued by the Department of Water and Sanitation (DWS) for doing work in the regulated areas on site. This authorisation has legal conditions to be complied with. The conditions that relevant to the construction phase are summarised below. The full GA notice accompanies this EMP as a separate addendum.

Conditions for impeding or diverting the flow of water or altering the bed, banks, course or characteristics of a watercourse

(1) The water user must ensure that:

(a) impeding or diverting the flow or altering the bed, banks, course or characteristics of a watercourse do not detrimentally affect other water users, property, health and safety of the general public, or the resource quality;

(b) the existing hydraulic, hydrologic, geomorphic and ecological functions of the watercourse in the vicinity of the structure is maintained or improved upon;

(c) a full financial provision for the implementation of the management measures prescribed in this General Authorisation, including an annual financial provision for any future maintenance, monitoring, rehabilitation, or restoration works, as may be applicable; and

(d) upon written request of the responsible authority, they implement any additional management measures or monitoring programmes that may be reasonably necessary to determine potential impacts on the water resource or management measures to address such impacts.

(2) Prior to the carrying out of any works, the water user must ensure that all persons entering on-site, including contractors and casual labourers, are made fully aware of the conditions and related management measures specified in this General Authorisation.

The water user must ensure that –

(a) any construction camp, storage, washing and maintenance of equipment, storage of construction materials, or chemicals, as well as any sanitation and waste management facilities –

(i) is located outside the 1 in 100 year flood line or riparian habitat of a river, spring, lake, dam or outside any drainage feeding any wetland or pan, and

(ii) is removed within 30 days after the completion of any works.

b) The water user must ensure that the selection of a site for establishing any impeding or diverting the flow or altering the bed, banks, course or characteristics of a watercourse works:

- (i) is not located on a bend in the watercourse;
- (ii) avoid high gradient areas, unstable slopes, actively eroding banks, interflow zones, springs, and seeps;
- (iii) avoid or minimise realignment of the course of the watercourse;
- (iv) minimise the footprint of the alteration, as well as the construction footprint so as to minimise the effect on the watercourse.
- (c) The water user must ensure that a maximum impact footprint around the works is established, clearly demarcated, that no vegetation is cleared or damaged beyond this demarcation, and that equipment and machinery is only operated within the delineated impact footprint.
- (d) The water user must ensure that measures are implemented to minimise the duration of disturbance and the footprint of the disturbance of the beds and banks of the watercourse.
- (e) The water user must ensure that measures are implemented to prevent the transfer of biota to a site, which biota is not indigenous to the environment at that site.
- (f) The water user must ensure that all works, including emergency alterations or the rectification of incidents, start upstream and proceed in a downstream direction, to ensure minimal impact on the water resource.
- (g) The water user must ensure that all material excavated from the bed or banks of the watercourse are stored at a clearly demarcated location until the works have been completed, upon which the excavated material must be backfilled to the locations from where it was taken (i.e. material taken from the bed must be returned to the bed, and material taken from the banks must be returned to the banks).
- (h) The water user must ensure that adequate erosion control measures are implemented at and near all alterations, including at existing structures or activities with particular attention to erosion control at steep slopes and drainage lines.
- (i) The water user must ensure that alterations or hardened surfaces associated with such structures or works –
 - are structurally stable;
 - do not induce sedimentation, erosion or flooding;
 - do not cause a detrimental change in the quantity, velocity, pattern, timing, water level and assurance of flow in a watercourse;
 - do not cause a detrimental change in the quality of water in the watercourse;
 - do not cause a detrimental change in the stability or geomorphological structure of the watercourse; and
 - does not create nuisance condition, or health or safety hazards.

The water user must ensure that measures are implemented at alterations, including at existing structures or activities, to –

- (i) prevent detrimental changes to the breeding, nesting or feeding patterns of aquatic biota, including migratory species;

(ii) allow for the free up and downstream movement of aquatic biota, including migratory species; and

(iii) prevent a decline in the composition and diversity of the indigenous and endemic aquatic biota.

(k) The water user must ensure that no substance or material that can potentially cause pollution of the water resource is being used in works, including for emergency alterations or the rectification of reportable incidents.

(l) The water user must ensure that measures are taken to prevent increased turbidity, sedimentation and detrimental chemical changes to the composition of the water resource as a result of carrying out the works, including for emergency alterations or the rectification of reportable incidents.

(m) The water user must ensure that in-stream water quality is measured on a weekly basis during construction, including for emergency alterations or the rectification of reportable incidents, which measurement must be by taking samples, and by analysing the samples for pH, EC/TDS, TSS/Turbidity, and/or Dissolved Oxygen ("DO") both upstream and downstream from the works.

(n) The water user must ensure that in-stream flow, both upstream and downstream from the works, is measured on an ongoing basis by means of instruments and devices certified by the South African Bureau of Standards ("SABS"), and that such measurement commences at least one week prior to the initiation of the works, including for emergency alterations or the rectification of reportable incidents

(o) During the carrying out of any works, the water user must take the photographs and video-recordings referred to in paragraph (p) below, on a daily basis, starting one (1) week before the commencement of any works, including for emergency structures and the rectification of reportable incidents, and continuing for one (1) month after the completion of such works:

(p) The following videos recordings and photographs must be taken as contemplated in paragraph (o) above:

(i) one or more photographs or video-recordings of the watercourse and its banks at least 20 meters upstream from the structure;

(ii) one or more photographs or video-recordings of the watercourse and its banks at least 20 meters downstream from the structure; and

(iii) two or more photographs or video-recordings of the bed and banks at the structure, one of each taken from each opposite bank.

10. Rehabilitation

(1) Rehabilitation as contemplated in paragraph 6(1)(v) above must be conducted in terms of a rehabilitation plan and the implementation of the plan must be overseen by a suitably qualified SACNASP professional member.

- (2) Upon completion of the construction activities related to the water use –
- (a) a systematic rehabilitation programme must be undertaken to restore the watercourse to its condition prior to the commencement of the water use;
 - (b) all disturbed areas must be re-vegetated with indigenous vegetation suitable to the area; and
 - (c) active alien invasive plant control measures must be implemented to prevent invasion by exotic and alien vegetation within the disturbed area.
- (3) Following the completion of any works, and during any annual inspection to determine the need for maintenance at any impeding or diverting structure, the water user must ensure that all disturbed areas are—
- (i) cleared of construction debris and other blockages;
 - (ii) cleared of alien invasive vegetation;
 - iii) reshaped to free-draining and non-erosive contours, and
 - (iv) re-vegetated with indigenous and endemic vegetation suitable to the area.
- (4) Upon completion of any works, the water user must ensure that the hydrological functionality and integrity of the watercourse, including its bed, banks, riparian habitat and aquatic biota is equivalent to or exceeds that what existed before commencing with the works.

11. Monitoring and reporting

- (1) The water user must ensure the establishment and implementation of monitoring programmes to measure the impacts on the resource quality to ensure water use remains within the parameters of paragraph 8(3)(m) to (o) and results are stored;
- (2) Upon the written request of the responsible authority the water user must –
- (a) ensure the establishment of any additional monitoring programmes; and
 - (b) appoint a competent person to assess the water use measurements made in terms of this General Authorisation and submit the findings to the responsible authority for evaluation.
- (3) The water user shall monitor and determine present day values for water resource quality before commencement of water uses in terms of section 21(c) or (i) of the Act.
- (4) Upon completion of construction activities related to the water use, the water user must undertake an Environmental Audit annually for three years to ensure that the rehabilitation is stable, failing which, remedial action must be taken to rectify any impacts.
- (5) Rehabilitation structures must be inspected regularly for the accumulation of debris, blockages, instabilities and erosion with concomitant remedial and maintenance actions.
- (6) Copies of all designs, method statements, risk assessments as done according to the Risk Matrix, rehabilitation plans and any other reports required must be made available to the responsible authority when requested to do so.

12. Budgetary provisions

- 1) The water user must ensure that there is a sufficient budget to complete, rehabilitate and maintain the water use as set out in this General Authorisation.
- (2) The Department may at any stage of the process request proof of budgetary provisions

8.4 Avifauna (Birds) specialist mitigation measures

An avifauna study was undertaken to determine bird sensitivities along the powerline route. The full avifauna report is available with details of findings. Below are the overall recommendations to mitigate negative impacts on bird-life

1. Avoid removing trees and other vegetation that do not pose a risk to the powerline or that don't hamper construction activities
2. Construction activity to be restricted to the immediate footprint of the infrastructure
3. Structures to be constructed using bird-friendly structures
4. Insulation of sleeves and jumpers to be applied on strain poles, terminal poles and box transformers
5. Bird electrocutions and collisions to be reported according to Eskom processes ie *The procedure for the effective Management of safety, health and environmental related incidents* EPC 32-95 and the Environmental incident management procedure 240-133087117
6. Insulation material to be maintained during operation of line
7. Bird flight diverters to be installed on span of powerlines crossing rivers, next to waterbodies and next to the Aasvoelberg Vulture colony near Zastron as these are areas of high sensitivity.

9. Environmental Incidents

*The procedure for the effective Management of safety, health and environmental related incidents EPC 32-95 and the Environmental incident management procedure **240-133087117** should be used for the reporting of all environmental incidents such as bird kills, vegetation destruction, oil spills, erosion, herbicide spillages etc. within 24 hours of the incident occurring or being discovered.*

10. Training

It is important for personnel to be trained and informed regarding the content of the EMP and the activities that could be damaging the environment. *The project coordinator should notify the responsible environmental officer a minimum of 2 months prior to proposed project kick-off so that an environmental training session can be arranged for the contractor and relevant team members.*

11. EMP register for Rouxville- Zastron 33kV power line project

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
Pre-construction, main site establishment	Site layout and planning	Erosion, soil and water pollution	<p>1. A site which has minimal impact on the immediate and surrounding environment must be selected: A preliminary investigation must be done as to the situation of this site.</p> <p>2. Aspects such as slope and distance from water bodies must be taken into consideration to minimize erosion and pollution of surface water.</p> <p>3. Site camp should be located away from water bodies and other sensitive environments</p>	Incident reports, Complaints from interested and affected parties register	Contractor and/or project coordinator	Prior to construction	
Construction	Excavations /soil stripping	Soil erosion, health and safety risk	<p>1.All excavated soils that are stockpiled to be adequately bunded by suitable material around the entire circumference of the stockpile as an erosion control measure from wind, water and animals</p> <p>2. Topsoil (the upper 200-300mm of the soil profile) to be stockpiled separately from the subsoil. When re-instating or backfilling the soil the sub-soil layer will be</p>	Signs of erosion; complaints from landowner	Contractor; Clerk of works	Construction	

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
			<p>backfilled first followed by the topsoil layer.</p> <p>3. Topsoil that is stripped should be stockpiled separately and protected/conserved (by covering it with material that will prevent it from being washed or blown away) to be used for rehabilitation purposes</p> <p>4. Open excavations should be covered with adequate covering and visible, sturdy barricading to prevent people or animals from falling in. These excavations should be inspected regularly.</p> <p>5. Barricading should be positioned 1m or more from the edge of excavation</p> <p>6. Disturbance of soil through excavations to ideally be limited to tower excavation sites.</p> <p>7. Where construction activities cause soil erosion or aggravate it, erosion control measures such as erosion berms, gabions, silt traps etc. should be installed</p> <p>8. Only compact the area required around the excavations</p>				

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
			9. Where soil has been compacted due to frequent vehicular movement , this areas to be lightly ripped during the rehabilitation phase in order to loosen the soil and encourage faster re-emergence of vegetation				
	Vegetation	Destruction of vegetation	<p>1.No picking/removal of any plants from site will be permitted if it's not part of bush-clearing activities</p> <p>2. Vegetation clearance or removal to be limited to footprint required for the scope activities to be accomplished</p> <p>3. Re-seeding with a seedmix of vegetation indigenous to the area to be used where topsoil with an active seedbank was not available/sufficient for rehabilitation or stabilising of soil</p> <p>4. Care must be taken to not introduce alien invasive species to the area</p>		Contractor; Clerk of works		

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
	Animals	Destruction of habitats; disturbance of livestock; livestock loss due to gates not being closed	1.No hunting or snaring of any animals is allowed 2. Speed limits to be kept low to minimise risk of collisions with animals 3. Gates to be managed according to landowners instructions		Contractor; clerk of works		
	Birds	Electrocution/collision/loss of habitat	1. Avoid removing trees and other vegetation that do not pose a risk to the powerline or that don't hamper construction activities 2. Structures to be constructed using bird-friendly structures 3. Insulation of sleeves and jumpers to be applied 4. Bird electrocutions and collisions to be report according to Eskom processes ie <i>The procedure for the effective Management of safety, health and environmental related incidents EPC 32-95</i> and the <i>Environmental incident management procedure 240-133087117</i>				

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
			5. Insulation material to be maintained during operation of line 6. Bird flight diverters to be installed on span of powerlines crossing rivers, next to waterbodies and next to the Aasvoelberg Vulture colony near Zastron as these are areas of high sensitivity				
	Surface water and/or existing water systems	Pollution of watercourses; degradation of watercourses	1. Water courses should be kept free of any litter or any other form of pollution 2. No surface or groundwater may be polluted due to any activity on the site. 3. Construction must include appropriate design measures that allow surface and subsurface movement of water along drainage lines so as not to impede natural surface and subsurface flows. 4. No stockpiling is allowed in depressions or in water courses	Complaints register, Incident Flash report	Design engineer; Contractor; Clerk of works	Design and construction	

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
			<p>6. No new access roads to be constructed through drainage lines and waterbodies. Existing roads must be used as far as possible.</p> <p>7.The surface water resources and the associated buffer zones are to be designated as “highly sensitive” and care must be taken when working in these areas to not cause damage</p> <p>8.No hazardous materials are to be stored or brought near watercourse areas. Should a designated storage area be required, the storage area must be placed at the furthest location from the sensitive areas. Appropriate safety measures as stipulated above must be implemented</p> <p>9 .Access of all construction and material delivery vehicles should be strictly controlled, especially during wet weather to avoid compaction and damage to the soil.</p>				

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
			<p>10. Avoid driving through wetlands and watercourses. Where work is required inside a watercourse or wetland, access should be gained by foot where possible</p> <p>11.If there is an unavoidable need for vehicles or machinery to enter the watercourse areas then a single route must be used into and out of the watercourse to minimise damage</p> <p>12. Vehicles to be checked for leaks before entering watercourse areas or working near watercourses</p> <p>13. Limit the removal of indigenous vegetation to excavation sites.</p> <p>14. Soil disturbance to be limited to excavation sites as a far as possible</p> <p>15. Energy dissipation measures to be implemented at the informal drainage</p>				

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
			<p>channels where the risk of scouring or erosion is high</p> <p>16. No washing or servicing of vehicles to be done in or near watercourse areas</p>				
	Cement mixing	Soil and water contamination	<p>1.Any cement mixing should be done on a suitable, non-permeable platform that prevents any spillage or contamination of the soil or any water body. No cement mixing is to be done on bare soil</p> <p>2.Runoff from the cement/ concrete batching areas must be strictly controlled to prevent soil,vegetation or water contamination</p> <p>3.Cement bags should be rinsed of any cement residue with water and the water used in cement mixing operations. Only washed cement bags can be disposed of as general waste.</p>		Contractor		

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
PCB status of oil in equipment (transformer, CT, VT, breaker and any other oil containing equipment)	Handling and disposal of oil	Oil pollution, Health risk	<ol style="list-style-type: none"> 1. It is recommended that the PCB status of all oil containing equipment be established before removal where applicable. 2. Measures must be in place to prevent oil spills e.g. use of correct & good condition equipment, procedures & use of trained personnel, oil catchment/bundwall area 3. There must be sufficient, fully equipped spill kits and personnel trained on usage of spill kits onsite. 4. Emergency clean-up plans must be arranged prior, should there be major spill e.g. clean-up consultants contacts established and available. 5. Incidents must be reported as per environmental incidents procedure 240-133087117 	PCB testing records/ results, Disposal certificates, Incident flash report, Oil spill Investigation report	Engineer/ Planner/ Project Coordinator; Clerk of works Contractor	Throughout project implementation	
Disposal of insulation oil from CT, VT, breaker and any other oil containing equipment	Handling, disposal and storage	Pollution, Health and Business risk.	<ol style="list-style-type: none"> 1. The oil must only be disposed of at hazardous disposal site registered to handle such waste. 2. Oil to be disposed must be referred to <i>Commercial Department- Assets Disposal (051-404 2310)</i> 3. Records of quantity, disposal site, and disposal 	Disposal certificates, Records of disposal	Engineer/ Planner/ Project Coordinator, Asset disposal officer	Throughout project implementation	

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
			<p>date & names of transporters must be kept and submitted to the Environmental section after project completion.</p> <p>4. Hazardous materials identified for disposal must not be stored for more than 60 days while preparations are made for final disposal.</p> <p>5. Oil spill kits should be kept on site at all times and on vehicles that transport oil containing equipment.</p>				
Draining of oil	Handling, spills	Soil, cement & possible water pollution.	<p>1. Measures must be in place to prevent oil spills e.g. use of correct & good condition equipment, availability of oil draining procedures & use of trained personnel.</p> <p>2. There must be spill kits and trained personnel on spill kit use onsite.</p> <p>3. Emergency clean-up plans must be arranged prior, should there be major spill e.g. clean-up consultants.</p>	Incident Flash Reports, Oil Spill investigation report	Eskom personnel and/or contractor	Throughout project implementation	
Storage of oil and fuels	Handling, spills, leaks	Possible pollution to water or soil.	<p>1. Storage containers must be of a good condition so as not to cause spillages</p> <p>2. Storage facilities must be in good condition that pollution will not occur.</p>	Incident Flash Reports, Oil Spill investigation report	Eskom Personnel	Throughout project implementation	

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
			<p>3. Oil storage containers should be marked indicating type of oil stored</p> <p>3. Areas where oil containing equipment or fuel is kept must be clearly demarcated and equipment should be standing on drip trays on impervious surfaces ie where oil can't seep through.</p> <p>4. Oil stores should be well-ventilated , with covered roofs so rain doesn't enter; stable and well bunded to avoid spills or leaks</p> <p>4. Oil and/or oil containing equipment should be kept away from any water sources or water drainage areas</p> <p>6. Well-equipped and serviced oil spill kits to be available on site for ease of access</p> <p>7. Site personnel to be trained on the proper usage of oil spill clean-up kits</p> <p>8. Services fire extinguisher to be available close by to oil/fuel store</p>				
Transport of oil and	Handling Oil spillage/ leaks from	Possible pollution to	1. There must be spill kits and trained personnel on	Incident Flash Reports, Oil	Eskom personnel	Throughout project	

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
handling of oil/fuels	poor packaging. Road accident.	road, soil, & water.	<p>spill kit use in the transportation vehicle.</p> <p>2. Emergency plans must be arranged prior to transportation, should there be major spill e.g. clean-up consultants contacts knowns, travel routes determined.</p> <p>3. Vehicles used for transportation must be road worthy.</p> <p>4. Oil containing equipment must be transported on drip trays</p> <p>5. New poles that are treated with creosote should not be placed directly on bare soil or vegetation. Rather implement measures such as placing them on wooden pallets underlain by plastic sheeting to avoid creosote dripping onto the ground</p>	Spill investigation report	and/or contractor	implementation	
Transportation of waste	Road accident, Spills	Injuries, Fatalities, Damages, pollution	<p>1. Emergency plans must be arranged prior to transportation, should there be accidents e.g. travel routes, clean-up consultants.</p> <p>2. Vehicles used for transportation must be road worthy.</p> <p>3. During transportation, speed limits and all traffic signs must be adhered to.</p>	Emergency plans, Incident flash report	Eskom personnel and or Contractor	Throughout project implementation	

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
			<p>4. Materials must be safely and adequately contained</p> <p>5. Transportation of hazardous waste should be done only by registered hazardous waste transporters.</p> <p>6. There must be spill kits on vehicles and trained personnel on spill kit use</p>				
Incidents	Reporting and response measures.	Pollution, damages, injuries	<p>1. The procedure for the effective Management of safety, health and environmental related incidents EPC 32-95 and the Environmental incident management procedure 240-133087117 should be used for the reporting of all environmental incidents such as bird kills, vegetation destruction, oil spills, erosion, herbicide spillages etc. within 24 hours of the incident occurring or being discovered.</p> <p>2. Oil spills to be rated according to the spill assessment table included as appendix A.</p>	Incident Flash report,	All Eskom personnel and or Contractor	Throughout project implementation	

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
General	Access	Unauthorised access to substation, injuries and damages	<ol style="list-style-type: none"> 1. Access to site during project implementation to be arranged with the TSO or Project Coordinator. 2. Use existing roads/access roads and avoid making multiple tracks 3. Gates found closed should be closed once again when passed through. 4. There should be no climbing or crawling over or through a fence or gate without permission of the owner of landowner 5. Reference to be made to the access conditions stipulated by landowner 	Complaints register, Incident Flash report	Eskom personnel and or Contractor	Throughout project implementation	
Training	Performing activities that could have negative environmental damages	Incidents and response measures	<ol style="list-style-type: none"> 1. Personnel must be informed and educated with regards to the contents of the EMP and with respect to activities that could be harmful to the environment. 2. NEMA 28(3) (b): Reasonable remedial measures required include informing and educating employees about the environmental risks of their work. 3. Personnel must be trained to deal with emergency 	Training records, certificates	Project Coordinator, Contractor,	Throughout project implementation	

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
			situations and should be capable of using an Oil spill kit to treat minor spills.				
Transportation /Vehicles	Driving	Trampling of vegetation, habitat destruction , damage to wetland area	<p>1. Driving on site should be kept to minimal speeds to minimise threat to livestock and reduce risk of excessive erosion</p> <p>2. Avoid causing undue damage to waterbodies, roads, vegetation, crops or fields prepared for planting, etc. through vehicular movement</p> <p>3 Existing access roads shall be used unless otherwise arranged with the landowner.</p> <p>3. Any damage caused during construction by vehicles to roads should be repaired</p> <p>4. Washing of vehicles is not permitted on site</p>		All members of project team	During construction	
	Fuel leaks	Possible water pollution, land pollution, reduction in quality of wetland functions and	<p>1. All vehicles will be in a roadworthy condition and will be checked or leaks such as oil, petrol or diesel before entering the construction area.</p> <p>2. No maintenance of any sort to vehicles should be done on site.</p>		All members of project team who visit/work on the project site	During construction and throughout plant's lifecycle	

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
		ecosystems	3. Drip trays must be placed underneath all stationary construction vehicles on site especially where there is a high risk of leaks coming from the vehicle				
Waste management	Waste and hazardous substances	Pollution of substation yard and surrounding area	<p>1. Sufficient refuse bins with secure lids must be made available on site. Waste Bins to be labelled according to waste types</p> <p>2. All waste including general litter must be removed from the site and disposed of at a licensed disposal site on a regular basis.</p> <p>3. No waste is to be left on site.</p> <p>4. All hazardous waste must be kept in marked receptacles in a demarcated area on site.</p> <p>5. Hazardous waste must only be disposed of at hazardous disposal site registered to handle such waste.</p> <p>6. Records of quantity, disposal site, and disposal date and transporters must be kept and recorded in the waste disposal register kept in the environmental file</p>	Waste is managed properly and efficiently. Site is clean and tidy	Eskom personnel and or Contractor	Throughout project implementation	

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
			<p>7. Hazardous materials identified for disposal must not be stored for more than 90 days while preparations are made for final disposal.</p> <p>8. If possible, refuse must be recycled, reused or sorted.</p> <p>9. No solid waste is to be burned on site.</p>				
	Health and safety issues	Unhealthy living conditions and hazardous working conditions for workers	<p>1. An adequate number of toilet and water facilities must be provided. All water facilities, toilets, bins, etc, must be serviced regularly. The facilities must comply with ESKOM standards & other legal requirements.</p> <p>2. A fully serviced first aid kit must be close at hand on site at all times.</p> <p>3. Warning signs are to be set up in advance of road works for motorists.</p> <p>4. Warning signs are to be put up by electrical equipment and hazardous substances</p>	Incident Flash reports, Complaints register	Eskom personnel and or Contractor	Throughout project implementation	
	Noise	Noise pollution from vehicles and workers	<p>1. Limit work to daylight hours.</p> <p>2. Fit silencers on vehicles if necessary.</p>	Complaints register	Eskom personnel and or Contractor	Throughout project implementation	

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
			3. Workers to conduct themselves in a respectable manner.				
	Fire	Uncontrolled fires	<p>1. No open fires to be allowed anywhere on site.</p> <p>2. Ensure that the site is equipped with adequate firefighting equipment and personnel are adequately trained.</p> <p>3. Fire extinguishers must be available on site.</p>	No outbreaks of fires due to negligence	Eskom personnel and or Contractor	Throughout project implementation	
	Social	Complaints from interested and affected parties	<p>1. Activities that may cause conflict with adjacent landowners, the local community must be avoided.</p> <p>2. Should conflict arise, it should immediately be reported to the ESKOM project manager.</p> <p>3. Properties, fences, locks or gates of Eskom and the adjacent landowners shall not be damaged when accessing the site.</p>	Complaints register	Eskom personnel and or Contractor	Throughout project implementation	
	Possible Archaeological/Paleontological artefacts	Loss or damage to Archaeological/Paleontological artefacts	If any archaeological or paleontological materials are found during this project, construction must cease immediately at that location and the environmental officer whose name appears on the front of this document should be contacted immediately.	Incident Report	Eskom personnel and or Contractor	Throughout construction stage.	

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
			<p>Fossil Chance Find Protocol</p> <p>Monitoring Programme for Palaeontology – to commence once the excavations / drilling activities begin:</p> <p>The following procedure is only required if fossils are seen on the surface and when drilling/excavations commence.</p> <ol style="list-style-type: none"> 1. When excavations begin the rocks must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (plants, insects, bone, coal) should be put aside in a suitably protected place. This way the project activities will not be interrupted. 2. Photographs of similar fossils must be provided to the 				

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
			<p>developer to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones (. This information will be built into the EMP training and awareness plan and procedures.</p> <p>3. Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.</p> <p>4. If there is any possible fossil material found by the developer/environmental officer/contractor then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible.</p> <p>5. Fossil plants or vertebrates that are considered to be of</p>				

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
			<p>good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits.</p> <p>6. If no good fossil material is recovered then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.</p> <p>7. If no fossils are found and the excavations have finished then no further monitoring is required.</p>				

Activity	Aspect	Impact	Mitigation Measures	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks

12. Conclusion

This EMP highlights the environmental issues related to the Rouxville to Zastron 33kV powerline project. This EMP encourages easy management of activities and related impacts. In order to minimise negative environmental impacts, these recommended measures must be implemented. The EMP is a stand-alone document, which must be used on the site throughout all development phases. The onus set out in the EMP rests with the Eskom personnel and the contractors, who need to be environmentally responsible and demonstrate environmental commitment.

13. Important Recommendations

- To ensure conformance to the EMP, it is recommended that a monitoring program be set up. The monitoring program can be used to monitor the effectiveness of the EMP and also identify environmental issues and impacts that have not been accounted for in the EMP, which are or could result in significant environmental impacts for which corrective action is required.
- **It is important that the Environmental Management Plan be presented and explained to the Construction team and/or contractors in order to familiarise them to the environmental agreements and conditions.**
- Site visits are to be conducted throughout the project by the relevant environmental practitioner, representatives from construction, project management or affected parties at predetermined intervals.
- It is recommended that emergency plans be put in place for the activities identified within the EMP in order to minimise possible impacts should incidents occur.
- Prior arrangement must be made for the timely / immediate appointment of clean-up consultant should major spill occur.

- All equipment handled must be inspected for cracks, open lids, loose screws, leaks etc. during operation, before removal and transportation.
- All assets that are to be sold must be referred to Maxi Wesi , Commercial Department and Assets Disposal. Contact number: 051-404 2310
- **The EMP is a dynamic, living document meaning that it can be amended during the course of the project should new aspects arise or certain information becomes irrelevant. Any new environmental aspect identified during the project needs to be added to the EMP register above. Similarly, should there be a variation in scope that deems some aspects become irrelevant then these would also need to be removed. Help in this regard can be obtained from the environmental section. Contact details: Mahlatse Moeng (051) 404 2287/Earl Daniels (051) 404 5759**

14. Standard Conditions to be adhered to during construction and Operation

- 1.1 The Eskom project manager or co-ordinator shall be responsible for ensuring that the land owners/ TSO/ Project co-ordinator have been informed before any work is carried out on site. Contractors shall find out if owners/ TSO/ Project co-ordinator the have been informed before moving onto site.
- 1.2 No fences, gates or locks shall be damaged to obtain access onto a line route. Arrangements shall be made in advance to obtain permission for access.
- 1.3 Use of private roads shall be arranged in advance. Any damage to private roads shall be repaired at the contractor's expense and to the satisfaction of the landowner. This shall be the responsibility of the project manager or coordinator.
- 1.4 Gates shall be left as they are found, i.e. closed gates shall be kept closed and open gates shall be left open. Gates to adjacent properties or onto public roads shall be closed at all times. Any Eskom gates installed on the line route shall be kept closed and locked except while stringing is taking place. Open gates shall be guarded to prevent animals straying and unauthorized persons and vehicles entering into adjacent camps or properties.
- 1.5 Permission shall be obtained from landowners before any water is used.
- 1.6 No fires shall be lit on private property.. No firewood shall be collected in the veld.
- 1.7 If activities that can cause a fire are carried out, fire extinguishers shall be available on site and in the construction camp.
- 1.8 No property may be accessed after normal working hours except with the permission of the landowner /TSO/ Project co-ordinator. Privacy shall be respected at all times.
- 1.9 Eskom, Eskom's contractors and their employees shall at all times be courteous towards landowners, tenants and the local community.
- 1.10 Eskom, Eskom's contractors and their employees shall not cause damage to property, crops or animals. Activities that may cause conflict with landowners, tenants, the local work force or the local community shall be avoided. Should conflict arise it shall be immediately reported to the Eskom project manager or coordinator.
- 1.11 Vehicles shall be driven at a moderate speed on private roads and stay within the statutory speed limit on public roads.
- 1.12 All movement of vehicles shall take place on the established Eskom servitude road or on private roads as agreed in advance. Keep to existing tracks. No movement shall take place through the veld. Special care shall be taken to prevent excess damage during wet weather.
- 1.13 If any vehicle should get stuck, the damage shall be repaired immediately so that no deep ruts remain.
- 1.14 Any damage to private property shall immediately be reported to Eskom and the owner. The damage shall be rectified immediately if possible and/or appropriate compensation shall be paid to the owner at the discretion of the project manager/coordinator in consultation with the property owner. A written record of damages and rectifying action shall be kept. The landowner's satisfaction with the outcome of rectifying action shall be obtained in writing.

- 1.15 A proper system of waste management shall be instituted in the construction camp. This entails that sufficient waste bins are available on site and in the construction camp. The waste shall be dumped at an approved waste disposal site. No containers, scrap metal, conductor etc. shall be left on site.
- All scrap shall be removed and taken to an appropriate disposal site. No oil, diesel or other chemicals shall be spilled or discarded anywhere. If an accidental spill occurs, it shall be reported immediately and cleaned to the satisfaction of Eskom and the landowner. No waste shall be left in the veld or on the line route.
- 1.16 Water and Toilet facilities shall be provided on site and in the construction camp. The facilities shall comply with Eskom standards and shall have the approval of the landowner.
- 1.17 No human excrement shall be left in the veld. If no toilet facilities are available such waste shall be buried *immediately*.
- 1.18 Herbicides shall only be applied with Eskom's permission and in accordance with the Eskom documented processes on Herbicides.
- 1.19 Camp and office sites shall be dismantled and removed after completion of the construction phase of the project. The site shall be rehabilitated to as close as possible its original condition to the satisfaction of the landowner that shall be in writing.
- 1.20 All excavations shall be enclosed to prevent animals or people from accidentally falling into excavations.
- 1.21 No trees shall be cut or removed without prior permission from the landowner. Permits shall be obtained for the cutting and removal protected trees

Other Documents

UNIQUE IDENTIFIER	DOCUMENT NAME
EPL 32-727	SHEQ Policy
EPC 32-245	Waste Management Procedure
EPC 32-95	Procedure for the Effective Management of Safety, Health and Environmental related Incidents
	National Environmental Management Act 107 of 1998.
	Hazardous Chemical Substances Act
	Occupational Health & Safety Act

Appendix A- Hydrocarbon spill assessment table

Hydrocarbon Spill Assessment Table				Template Identifier:		240-44047082		Re v 5
				Document Identifier:		240-47176039		Re v 5
				Authorisation Date:		01 February 2021		
				Revision Date:		01 February 2023		
Date:		Site Details:		Compiler:		Incident Number:		
Incident Details:								
<p>All hydrocarbon spills need to be assessed by completing this assessment table. Using your judgement based on the facts available, allocate the relevant numerical points (0, 1, 3 or 5) to the respective rows/columns. The cumulative score will automatically be updated and a colour coded rating allocated for you which then provides guidance on the appropriate corrective action. Consult with the relevant Environmental Officer for guidance, when unsure.</p>								
Condition	0		1		3		5	
Source of the spill	Minor drip		Weep		Drip/leak		Explosion/incident	
Age of spill	Spill happened now		Happened within last 24 hours		Happened recently - spill still moist (within the last week)		Historic (consequences/impact unknown)	
Timeous response	Notification adequate and timeous according to Environmental Incident Management Procedure		Notification but action not adequate to prevent further damage		Notification but no further action		Environmental Incident Management procedure not followed	
Threat to any water body until spill is cleaned (including weather conditions)	None – in bund area, not impacted by weather conditions		Low threat (although not in bund area), good weather conditions until spill is cleaned		Threat with rain, weather conditions are moderate and may changed unexpectedly		Raining and/windy with access to waterway/water resource	
Ability to contain spill	Within bund area or containment tank		Leak is minor - can be controlled, contained and plugged with a spill kit		Leak is moderate - cannot be successfully managed with spill kit.		Leak is serious, containment is impossible	
Life threatening conditions (human and environment)	None at all		Minor		Moderate		Serious	
			(potentially an environmental and health risk if not treated)		(environmental and/or health risk)		(uncontrolled release, impacting environment, health or property (NEMA S30/NWA S20))	
Properties affected	In bund area		On Eskom property Inside Eskom security fence		On Eskom property but outside security fence		Off-site (Eskom's neighbouring properties and public roads)	
Public relations threat	None		Small (no reputational damage envisaged)		Medium (reputational damage local)		Large (reputational damage national)	

Surface types	Bund area/concrete or cement /impermeable surface		Clay or compacted ground		Loose or loam soil		Sandy soil and gravel	
Traffic implications	Not on any road		Within Eskom boundaries		Public road/part of the road will just be cordoned off		Public road that will need to be closed off	
PCB presence*	None		Less than 50 ppm in the oil		Unknown		Over 50 ppm in the oil will automatically get ≥25 points	
Score	Sub total	0	Sub total	0	Sub total	0	Sub total	0
Total		0		Rating				
Rating and Mitigation Action	Insignificant spill		Minor spill		Moderate spill		Major spill	
	≤ 6 POINTS		7 - 13 points		14 – 24 points		≥ 25 points	
	Clean-up to be performed (using potable spill kits, rag, etc.), incident recorded in site register and reported to Environmental practitioner. Informed Recorded as 'For Noting'.		Clean-up must be performed (using potable spill kits, rag, etc.), site register updated and a report issued to the relevant Environmental practitioner, reported as an incident.		Contain, and consult or call in the assistance of the Environmental practitioner (and emergency response if needed), report as incident, possibly a legal contravention.		Contain, call on Environmental practitioner and site supervisor who will assess the situation and if needed call upon an emergency response team, report as an incident, possibly a legal contravention.	

