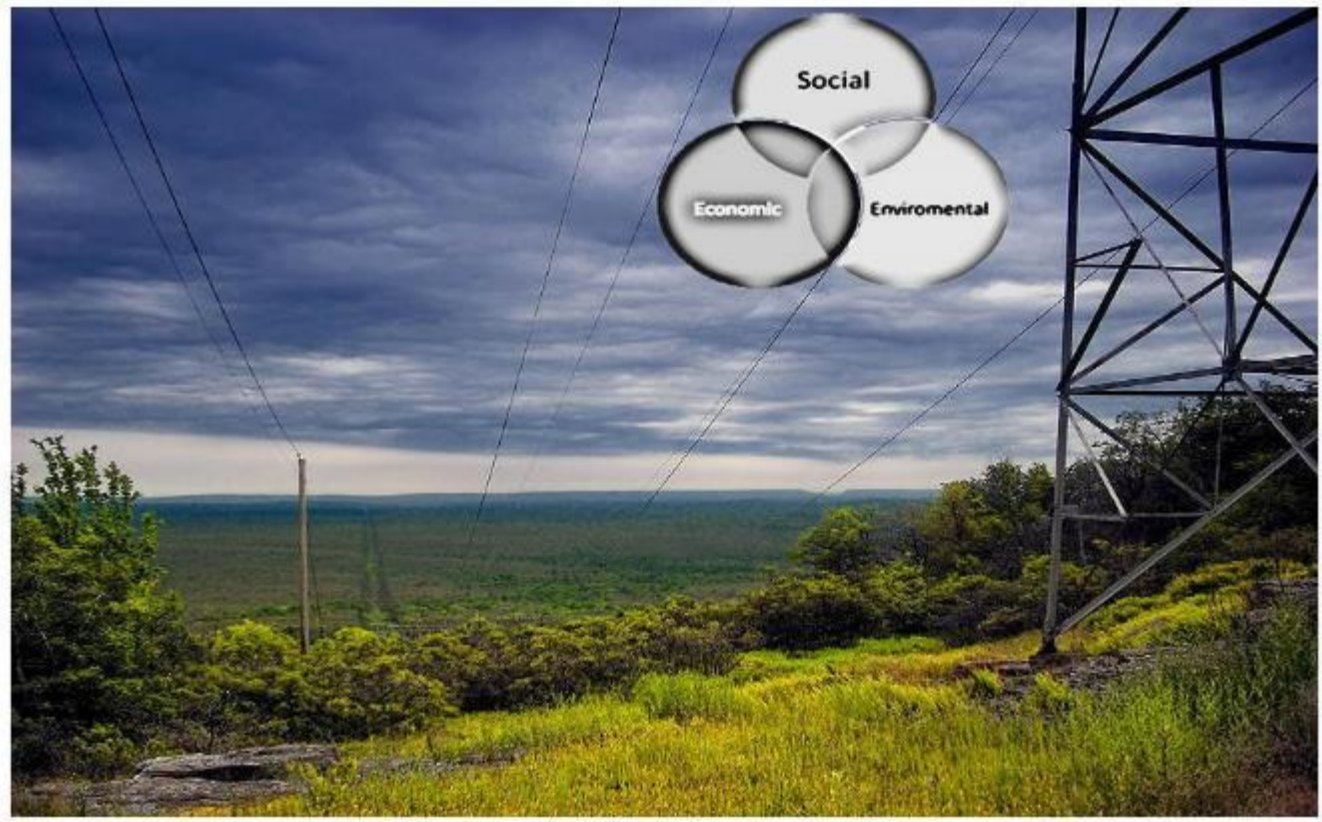
FREE STATE OPERATING UNIT
LAND DEVELOPMENT
ENVIRONMENTAL MANAGEMENT

ENVIRONMENTAL MANAGEMENT PLAN (EMP) FOR
Coaldale substation refurbishment

JOB: Coaldale substation refurbishment



Initial Report Date: 2 August 2012

Revision 01 date: 30 January 2021

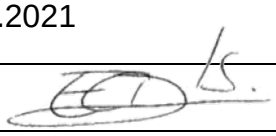
Environmental Officer:	Earl Daniels 051 404 5759 0736263503 danielec@eskom.co.za
Project Name:	Coaldale substation refurbishment Job: Coaldale substation refurbishement
Project Number:	NW-RFM-1709-2922-00001
Scope of work:	Job ID: NW-RFM-1709-2922-00001 • Replace 7 x 88kV Isolators • Replace 88kV CT's on SAR Ywer and Coalbrook Tractions feeder bays • Replace 88kV Breakers on SAR Ywer and Coalbrook Tranction feeder bays • Install 22kV Box structure busbar • Install 22kV Combo breakers • Install Fire wall • Install bund walls around the Transformers • Replace existing cable trenches • Replace fence with High security fence with 1m kerbing • Install proper substation drainage and add sufficient yard stones
Property Name:	Ruby 1848
Landowner:	Eskom servitude (ERF 1848)
Local Municipality:	Metsimaholo local municipality
EMP handover Date:	19.02.2021
Signature	

TABLE OF CONTENTS

ACRONYMS

EMP	Environmental Management Plan
EO	Environmental Officer
DWS	Department of Water Affairs and Sanitation
DEFF	Department of Environmental Affairs, Fishery and Forestry
SAHRA	South African Heritage Resources Agency
PPE	Personal Protective Equipment
OHSA	Occupational Health and Safety Act
SAPS	South African Police Services
DALRRD	Department of Agriculture, Land reform and Rural Development
PM	Project Manager
PC	Project Co-ordinator
LD&E	Land development and Environmental management
SS	Senior Supervisor

GLOSSARY

Environmental Authority: Statutory body that governs and prescribes the processes that needs to be undertaken for certain construction activities. They are also the decision making authority granting authorisation for specific projects.
Environmental Impact: Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services.
Environmental Management Plan (EMP): a programme that developed to reach the desired end state of the environment and describes how activities, that could have a negative impact, will be managed and monitored and impacted areas rehabilitated.
Eskom Environmental Officer: An individual appointed by Eskom to implement and monitor compliance to the EMP
Contractor: A person or company appointed by Eskom to carry out stipulated activities.
Environment: Surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans and their interactions.
Environmental Issues (Aspect): Elements of an organisation's activities, products or services which can interact with the environment.
Mitigate: The implementation of practical measures to reduce adverse impacts or enhance beneficial impacts of an action.
Monitoring: An activity which ensures that the requirements of the Environmental management Plan is met

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 **refurbishment of the Coaldale 88/22kV substation** project as per Section 24N (2) of National Environmental Management Act 107 of 1998 on integrated environmental management. This EMP must form part of the contractual agreement between Eskom and the contractor.

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 even avoided.

2. Scope of EMP

The development of the Environmental Management Programme is in accordance with the Eskom EMP procedure EPC 32-248. In reference to it, EMPs developed and implemented need to take into consideration all significant environmental issues and they are to be included in the document.

The scope of this Environmental Management Plan (EMP) for the **refurbishment of the Coaldale 88/22kV substation** is to give guidelines for environmental best practice, to the contractor commissioned to construct the proposed infrastructure for strengthening purposes. This EMP document should be regarded as part of the contract. This EMP will ensure that all proposed infrastructure is environmentally correctly and effectively constructed.

Furthermore, 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 EMP ultimately has a long term objective to ensure that this project is approached with a cradle to the grave perspective and will be followed throughout the full life cycle of the project.

The Environmental Management Programme Procedure EPC 32-248 complies with national environmental legislation such as the National Environmental

Management Act (NEMA) act 107 of 1998 under which the provision for EMPs is made in Section 11: Environmental Implementation Plans and Management Plans. In compliance with the above mentioned requirements, an EMP has to be developed for the **refurbishment of the Coaldale 88/22kV substation.**

EMP Objectives

The EMP aims to establish the following:

- A process to identify existing or to predict potential negative environmental impacts resulting from the refurbishment of the coaldale 88/22kV substation.
- Objectives and targets are set to ensure negative impacts are mitigated and existing impacts rehabilitated;
- Resources and responsibilities are allocated to each target; and
- Actions are implemented to mitigate the identified negative environmental impacts; and Monitoring programmes are developed to track the actions that have been implemented so as to ensure the effectiveness of the action.

2.1. EMP Compliance

The following are required for compliance with the EMP:

- Environmental training to be given to all resources working on project to understand what the possibly environmental impacts will be. **This training to be given by the contractor to their employees.**
- An Environmental register is to be kept on site at all times.
- The EMP must be available at all times on the construction site.

2.2. Project Responsibilities

PROJECT MANAGER	ESKOM ENVIRONMENTAL OFFICER	CONTRACTOR
The project manager is responsible for overall management of project and EMP implementation. The following tasks will fall within his/her responsibilities: • Be familiar with the recommendations and mitigation measures of this EMP, and implement these measures. • Monitor site activities on a daily basis for compliance • Conduct internal audits of the construction site against the EMP • Confine the construction site to the demarcated area. • Rectify transgressions through the implementation of corrective actions	The EO is responsible for the implementation of the EMP during the construction phase as well as liaison and reporting to Eskom, contractor and land owners, the following: • Be familiar with the recommendations and mitigation measures of this EMP • Conduct during construction audits and compile reports. • Educate on the management measures of the EMP. • Liaise with the construction team and project manager. • Recommend corrective action for non-conformance incidents on the construction site.	The contractor is responsible for the overall execution of the activities in the construction phase including the implementation and compliance at all times with recommendations and conditions of the EMP as well as implementation of findings during audits by the EO. Maintain an environmental register which keeps record of all incidents which occur on the site during construction. These incidents include: • Public involvement/ complaints • Health and safety incidents. • Incidents involving Hazardous materials stored on site. • Non-compliance incidents.

3. Environmental legislation framework

LEGISLATION	SECTION	RELATES TO
The constitution of South Africa	Chapter 2 Section 24 Section 25	• Bill of Rights • Environmental rights • Rights in property
National Environmental Management Act No. 107 of 1998 (NEMA)	Section 2 Section 24 (a), (d) & (5) Section 28	• Defines the strategic environmental management goals and objectives of the government. Applies throughout the Republic to the actions of all organs of state that may affect the environment detrimentally. • Listed activities and Regulations • The developer has a general duty of care for the environment and to institute such measures as needs be to demonstrate duty of care
Conservation of Agricultural Resources Act No. 43 of 1983	Section 6	• Implementation of control measures for alien and invasive plant species
National Heritage Resources Act No. 25 of 1999	The general principles for governing heritage resources in South Africa.	• Provides general principles for governing heritage resources management throughout South Africa including national and provincial heritage sites, burial grounds and graves; archaeological and palaeontological sites, and public monuments and memorials.
National Water Act No. 36 of 1998	Section 14 Section 19 Section 21	• Water pollution prevention and regulation of water uses

National Environmental Management Air Quality Act No. 39 of 2004	Sections 26-27 Section 32	• Control of fuels • Control of dust
Occupational Health and Safety Act No. 85 of 1993	Section 8 Section 9 Section 14 Section 24	• General duties of employers to their employees. • General duties of employers and self-employed persons to persons other than their employees. • General duties of employees at work • Reporting of incidents
Noise control regulations of Environmental Conservation Act No. 73 of 1989	Section 25	• Control of Noise
National Forest Act No. 84 of 1998	Section 15	• Declaration of protected trees
Hazardous Substances Act		•
Fencing Act 31 of 1963	Sections 17 Section 22	• Any person erecting a boundary fence may clean any bush along the line of the fence up to 1.5 metres on each side thereof and remove any tree standing in the immediate line of the fence • Any person who opens and leaves a gate open or unfastened or finding a gate open on passing through, neglects to shut and fasten a gate shall be guilty of an offence and liable for conviction.
National Roads Act 54 of 1971	Section 16	• Prohibits the dumping of material on or near a national road
National Environmental Management: Biodiversity Act 10 of 2004		• Provides for the provisions of the protection of South African flora, fauna and microorganisms.

4. Eskom Policies and Procedures

PROCEDURES	DESCRIPTION
EPL 32-727	SHEQ POLICY
EPL 32-97	LAND MANAGEMENT POLICY
EPL 32-114	ESKOM SPOKESPERSON POLICY
EPL 32-1163	ESKOM WATER MANAGEMENT POLICY
STANDARDS	
SANS ISO 14001:2015	ENVIRONMENTAL MANAGEMENT SYSTEMS-REQUIREMENTS WITH GUIDENCE FOR USE
SANS ISO 9001:2015	QUALITY MANAGEMENT SYSTEM
41-120	ESKOM REQUIREMENTS FOR PROCUREMENT OF ASSETS, GOODS AND SERVICES
GUIDELINES	
EGL 32-273	GUIDELINE FOR THE REHABILITATION AND VEGETATION MANAGEMENT OF HERBICIDE TREATED SITES
ADDENDUM 1	GUIDENCE ON OFF-SETS: APPROACH OF DAA FORESTRY REGARDING OFF-SETS AS CONDITION FOR THE LICENCING OF DESTRUCTION OF PROTECTED TREES AND NATURAL FORESTS
PROCEDURES	
EPL 32-6	PROCEDURE FOR DOCUMENTS AND RECORDS MANAGEMENT
EPC 32-644	ESKOM DOCUMENTATION MANAGEMENT STANDARD

240-53464409	CORRECTIVE AND PREVENTATIVE ACTION PROCEDURE
EPC 32-245	WASTE MANAGEMENT PROCEDURE
EPC 32-247	BUSH CLEARING AND MAINTENANCE WITHIN OVERHEAD POWER LINE SERVITUDES
EPC 32-248	EMP GUIDELINE
EPC 32-246	REPORTING ON ENVIROINMENTAL EXPENDITURE
240-44175038	CONTROL OF NON-CONFORMING PRODUCTS OR SERVICE PROCEDURE
342-2	DISTRIBUTION PROCEDURE FOR THE HANDLING OF NON-CONFORMANCE
TECHNICAL BULLETIN	
02TB 023	COVERING OF JUMPERS ON MV AUXILIARY STRUCTURES
03TB-026	VULTURE ELECTROCUTION RISK AREAS
00TB-01	APPROVED BIRD FLIGHT DIVERTERS TO BE USED ON ESKOM LINES (MITIGATING DEVICES)
10TB-017	HV INSULATION COVER APPLICATION FOR EXISTING DISTRIBUTION TOWERS (44-88Kv)
04TB27-27	GIRAFFE ELECTROCUTIONS

5. Environmental Management System tools

PERMISSIONS AND AGREEMENTS	
Notification of commencement to landowner	Through ward councillor and municipality
Permission to use municipal land fill site	Proof as letter or email
Agreement for septic toilet service	Contract as proof
Permission to use water on the project	Letter or email from municipality/ contract with service provider/ proof of purchase
Permission to use Gravel material from licenced burrow pit	Contract/ proof of purchase from provider
OPERATIONAL CONTROL DOCUMENTS	
Eskom EMP	Proof of copy in Environmental file
Contractor EMP	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
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 including COVID19 waste if applicable	Waste slips/ GPS coordinate and date stamped photos on disposal
Proof of toilet waste disposal	Service slips
Proof of legal disposal facility	Proof that toilet waste is being disposed of at legal registered, general and hazardous facility
Drip trays under all fuel containing vehicles and equipment on site and at the site camp	Physical visible proof on site
No defective fuel dripping vehicles and equipment on site	Vehicle and equipment service books
Labelled waste bins for general and hazardous waste	Physical proof on site
Labelled Health Risk Waste covid19 waste bins	Physical proof of bins on site
Oil spill kits on site per construction team	Physically on site and at the site camp
Training attendance registers	Proof of copy in Environmental file
TRAINING	
Eskom EMP	Attendance register in environmental file
Contractor EMP	Attendance register in environmental file
Environmental emergency procedure	Attendance register of training drills in environmental file.
Contractor waste management plan	Attendance register in environmental file

6. Common Environmental aspects

Landowners

- Landowners are an important Eskom stakeholder which are protected under section 2, 24 and 25 of the constitution.
- During the pre-construction phase of the project, the Eskom project manager or co-ordinator shall be responsible for ensuring that the landowners have been informed before any work is carried out on site.
- Contractors shall find out if the surrounding landowners have been informed before moving onto site.
- The project manager must engage with other stakeholders who are working on the site regarding site management, timing of works, site establishment, materials ordering, waste management, access, deliveries and construction area.

FIGURE 1: PROPOSED ACCESS ROUTE DEPICTED WITH A BLACK LINE

Barricading and Lighting

- Excavations will be done for platforms, foundations, trenches and structures within the substation.
- According to the Occupational Health and Safety Act 85 of 1993, every excavation which is accessible to the public or which is adjacent to public roads or thoroughfares, or whereby the safety of persons may be endangered, shall be adequately protected by a barrier or fence of at least one metre in height and one meter away from the excavation and provided with warning illuminates or any other clearly visible boundary indicators at night or when visibility is poor as is practicable.
- Community members and surrounding landowners should be sensitised regarding the project, its purpose and objectives in order to be included as part of the protection of the project material and barricading equipment against theft.
- Barricading should be installed around all open excavations atleast 1 meter away from the edge of the excavation.

Cement mixing

- With reference to the OHSA 85 of 1993, the Hazardous substances Act and the Eskom waste management standard (EPC 32-245), cement mixing only take place within a designated bunded area.
- Ready mixed concrete must be utilised where possible.
- No vehicle that transports concrete to the construction site must be washed on site.
- Cement contaminated water must not enter the water system as this disturbs the natural acidity of the soil and ultimately affects plant growth.
- Cement mixing on site must take place on an impermeable surface.
- The contractor is responsible to ensure that the cement bags are disposed of at a registered land fill site for hazardous substances

Oil

- It is recommended that the PCB status of all oil containing equipment be verified before removal. If PCB is confirmed, the environmental section needs to be contacted: Mahlatse Moeng (051) 404 2287.
- **Non PCB oils** can be disposed of at a **registered class H: H hazardous waste site**. Records of quantities disposed, disposal sites, disposal dates, transporters used and safe disposal certificate must be kept and copies submitted to the environmental section after project completion.
- As per the technical instruction NWRTI001/08, **hazardous material identified for disposal must not be stored for more than 60 days while preparations are made for final disposal.** If there is a possibility for such equipment having to be

stored for longer than 60 days, the environmental section needs to be notified at the following number: 051 4042980/ 2287.

- All oil containing equipment must be labelled with its PCB status. **Please note that no PCB oil should be sold.**
- Information on any sale of redundant oil can be obtained from Maxi Wesi, Asset Disposal 051 404 2310.
- **Emergency plans must be in place prior to the transportation of oil filled equipment**. Information on travel routes, emergency services numbers along route; oil spill clean-up consultants contact information must be available and easily accessible.
- The **supplier used to transport hazardous material must provide** such an **emergency plan** to the Eskom representative. Vehicles transportation must be road worthy and also free from oil leaks. All traffic rules and road signs should be adhered to and the equipment to be transported should ideally be placed in drip trays if they have the potential to leak.
- **Oil spills must be reported** according to the Procedure for the effective Management of safety, health and environmental related incidents EPC 32-95 section 4.2
- **No oil filled equipment should on stored on bare soil.**

"Notification (Initial reporting) All incidents must be reported, regardless of the severity of the incident. Once an employee identifies that an incident has occurred, he/she must immediately notify his/her supervisor of such an incident, regardless of its severity, so that an appropriate and timely response can be made, an initial evaluation conducted, and an incident classification made. The employee must also inform the health and safety representative of such incident. Initial reports must be brief and limited to an outline of the known facts (e.g. date, time, place, what happened and the immediate actions taken.) as stipulated in the minimum requirements for flash reports"

- Oil spill clean-up should be conducted according to the **Eskom standard: Oil spill clean-up & rehabilitation,** ESKASABT0**.** An oil spill kit should be kept on site during construction and in vehicles transporting oil filled equipment.
- **For major oil spills** an oil spill clean-up consultant should be called in, project coordinator or Clerk of works to make environmental section aware of any major oil spill on site:

TABLE 1: DETAILS OF OIL SPILL CLEAN-UP CONSULTANTS

COMPANY	CONTACT PERSON	TELEPHONE NUMBER	FAX NUMBER	24 HOUR SPILL RESPONSE
GREEN BANANA	CHRIS BADENHORST	**086 111 5265 / 0800 172743**	**086 111 5266**	082 458 4838
DRIZIT	TERENCE FYNN	(011) 462 9481	(011) 462 3310	0800 202 202
ENVIRO-TECHSA	DUANE de LANGE	051 4331624	086 732 0204	083 264 5289
PROCON ENVIRONMENTAL TECHNOLOGIES	WILLIAM MILLER	Witbank: (013) 697 4617 / 34 Pretoria: (012) 674 9030	(013) 607 4618	083 265 0843
ENVIROSORB (BFN)	HANRI STAND AT STANDER ER /	(051) 435 6630	(051) 435 6085	083 448 0634

Waste

- According to Section 24(a) of the Constitution, The National environmental management Waste Act 58 of 2008 and Eskom procedures on the handling, storing and disposing of waste on Eskom sites, ***Effective waste management*** will apply throughout the Eskom business and its subsidiaries where Eskom has an interest in.
- ***The purpose of waste management*** is to commit to waste reporting and tracking to ensure the protection of the environment. A waste management plan should therefore be used in order to minimize and manage waste and the associated risks in an environmental friendly and cost-effective manner through the reduction of waste generation and the conservation of resources must be promoted through judicious resource utilization, recycling, reuse and the disposal of waste (EPC 32-245).

- The standard on the selection, purchase and storage of hazardous material (34-440 4.5.1) states that the procurement department in consultation with Regional Risk Management (Environmental) shall be responsible for developing a contract with an authorized company/ organization for the disposal of hazardous waste material and/or contaminated containers.
- **Waste on site should be managed and disposed of according to the procedures** in place and good housekeeping shall be conducted on site in order to sustain the health and safety of all employees, the public and the environment.
- ***LICENSED WASTE SITES:*** Any waste disposal site established in the Region can only be operated once a permit has been issued by the Department of Water and Environment
- Find the table below with information regarding the licence holder and take note that the **contractors on site should obtain permission from the licence holder of waste landfill sites to dispose of waste at the mentioned sites.**
- The quantities of different types of waste disposed off should be recorded and reported on a monthly basis by the contractor to the SHEQS Environmental manager (Benito Williams – 051 404 2983).
- **Empty cement bags should be treated as hazardous waste on the project.**
- **Cement bags must be washed with water in containers and stored in labelled closed containers or waste bags in a barricaded area until it is dry.**
- **The dry cement bags can then be disposed of at a licenced general waste disposal site.**
- **The grey water can be utilised in construction processes thereafter.**
- **Workers who handle the cement bags should wear appropriate PPE, gloves and facial masks.**

See below information and contact details of registered waste disposal sites:

Hazardous waste landfill sites

- **Holfontein Landfill** +2713 661 9000
- **Roodepoort Incinerator** +2771 683 4458
- **Vissershoek Landfill** +2721 557 6160
- **Oranjeville waste water treatment plant** +27 16973 8391

LICENCE HOLDER	LICENCE NUMBER	CLASS OF WASTE	WASTE DISPOSAL FACILITY	ADDRESS
METSIMAHOLO MUNICIPALITY	WML/BAR/31/2014	G:S:B	Sasolburg landfill site (C)	Civic centre, Fichard Street, Sasolburg, 1947

TABLE 2: TABLE OF REGISTERED WASTE DISPOSAL SITES

Excavations

- Excavations will solely be made in order to construct the substation equipment and fence.
- Excavations must preferably be conducted after the area has been watered in order to reduce dust and air pollution.
- The **weather should be monitored** before the execution of the excavating activity to reduce the high levels of soil erosion and dust pollution to take place.
- **Keep the excavation activities to normal working hours during the day** and barricade the construction site to pose no danger to the farming community and to minimise noise pollution.
- **Redeposit the removed soil in the same layers as it was removed** in order to close the open trenches and to retain the fertile top soil.
- **Soil stockpiles should be kept in a safe place for re-use and re-filling of holes.** These stockpiles should be secured by packing or covering them with bricks or any other method that would prevent wind or water erosion.
- **Landscape rehabilitation** is also a major factor in the activity of excavation in order to attempt to get the environment to its original state.
- The excavation equipment and construction vehicles must be **regularly serviced** to prevent soil contamination from oil filled equipment and/or vehicles.
- **Make the construction notice board visible to pedestrians** who are using the footpath at the back of the proposed site.

Herbicides use

- Herbicides consist of chemical agents which are hazardous to the natural environment and may cause detrimental impact or environmental degradation to the environment.
- Herbicide usage on Eskom properties is guided by the Standard on Herbicide usage in Eskom prohibited and restricted areas, live chambers, telecommunication infrastructure yards and security fences (240-125477962)
- All herbicides, including the glyphosate-based produces, must be used according to their label instructions and safety statements.

- Due to the substation standing on a slopy areas and has agricultural crops and a natural drainage area in the surroundings, it isrecommended that the following herbicides should be used for existing weeds and for maintenance after construction:

  3.5 "Herbicide active ingredient selection based on the response

  3.5.1 Should any or combination of response be 'yes'

  3.5.1.1 ***For existing weeds in or on the restricted area***

  Apply a Glyphosate that is a non-residual (non-emergent germination) contact herbicide with a weed control action described in the definition for glyphosate's above.

  Note: This treatment will have to be repeated many times in a growth season, every time an inspection reveals the need for treatment. Manual removal of individual weeds on sight is critical for areas of high risk.

  3.5.1.2 ***To prevent weed infestation***

  Apply Triazines or Bromacil with a limited residual action (emergent germination control) that present the weed control mechanism described in the definition of these chemicals above.

  Note: The treatment interval required should be less than for the treatment described in 3.5.1.1 and be effective for approximately 6 months (a typical growth season)

  3.5.2 ***All the responses met with a 'no' assessment***

  Apply Triazines, Bromacil and Tebuthiuron mixtures in the granular form.

  Note: Under normal conditions this treatment should extend beyond a growth season."

  (Kraftt, K (2018),HERBICIDE USAGE IN ESKOM PROHIBITED AND RESTRICTED AREAS, LIVE CHAMBERS, TELECOMMUNICATION INFRASTRUCTURE YARDS AND SECURITY FENCES, 240-125477962)

  It is recommended that a category 3 herbicide containing Tebuthiuron should be applied directly on the top soil layer before the chip stone layer is established during civil works.

  On completion of earth works when chip stone layer is established, a category 2 Triazines or Bromacil containing herbicide can be applied to prevent weed infestation after construction.

- The application of herbicides should be carried out according to the procedure for vegetation clearance and maintenance within overhead power line servitudes and

Eskom owned land (EPC 32-247) which is in accordance with The Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act 36 of 1947).

- In terms of the above mentioned act, **herbicide application on a commercial basis must be carried out by a registered pest control operator or under the supervision of one.**

- The following was agreed upon in the registrar in August 2005 according to the EPC 32-247

  - *"When Eskom applies herbicides on Eskom owned property, (or substations under the control of Eskom) then Eskom employees may do this provided they have been appropriately trained and that responsibility is taken for this work. Therefore no need for the person to be registered as a PCO, or working under the supervision of a PCO"*

  - *"In cases when Eskom's Vegetation Management, who are Eskom staff, are "contracted" by an Eskom Division to apply herbicides on servitudes, then they must undertake this under the "management" of a registered PCO. There is no need for a PCO to be on-site at all times in this particular case"*

  - **A daily register must be kept of all the relevant information regarding the application of herbicides on the site**.

Asbestos

- **All asbestos facia boards need to be removed from the existing substation.** In order to do this there is a process regarding asbestos removal that needs to be adhered to. *The employer must notify in writing the provincial Department of Labour prior to the commencement of any Asbestos related work. This letter needs to be documented for audit purposes*. Asbestos containing material should be removed from site and transported immediately to disposal site after removal.

- All asbestos and asbestos containing material must be identified and recorded on an inventory. Care should be taken to minimise asbestos dust dispersion when handling asbestos and suitable dust masks must be worn throughout when working with the material. **No asbestos waste is to be left uncovered at the end of a workday.**

- **Only an approved Asbestos removal contractor certified by the Department of Labour** will be allowed to perform the removal as stipulated in Eskom procedure DST 34-1544 Management of Asbestos. The Project co-coordinator should not allow any work to be performed until such time that this certificate is received.

- The consultant will be **required to produce a cradle to grave plan of the Asbestos disposal after removal from site**. A waste manifest i.e.: a document providing quantity of Asbestos containing material disposed and proof of disposal

must be presented to the project co-coordinator after disposal and must be kept in the file for audit purposes.

- All asbestos trench cover or any **asbestos-containing material from the project must be disposed at registered Class H:h or Class H:H hazardous waste site** only or at sites specifically designated for this purpose according to the Environment Conservation Act (Act 100 of 1982) and must not be mixed with general waste.

- In the event that such a site is not locally available, according to the procedure referred to as the Requirements for the safe processing, storing, removing and handling of asbestos and asbestos containing material, equipment and articles (EPC 32-303), an application must be made to the Department of Water Affairs and Forestry (DWAF) in writing before any negotiations can be entered into with another site owner.

7. ENVIRONMENTAL ELEMENTS

6.1. Physical environment

6.1.1 Access & damage to properties

- The easiest access to the proposed site is from the R57 regional road
- All vehicle movement must be along existing roads and access tracks.
- Do not deviate from the existing access road at the gate as there is a depression wetland present, south from the gate (See figure 2).
- Vehicles should be driven at moderate speeds and special care should be taken to avoid eroding tracks especially in wet weather (See image 1).
- In circumstances where access is limited to the servitude, a single track/road is to be used.
- Multiple tracks are to be avoided at all times. Leave private gates, as they are found open or closed.
- Damaged ground surfaces, due to vehicle movement, must be repaired to the satisfaction of the landowner written proof must be obtained.
- All damage done to property must be reported to Eskom and the landowner.
- Repairs to the damage must be done immediately.
- Do not interfere with stock, crops or activities on the property.
- No wandering on surrounding properties whatsoever (See image 1).
- The landscaping of the site is important.

- There should be looked at the aesthetics of the site, screening of the site using embankments, walls and/or vegetation and rehabilitation.

FIGURE 1: GATE TO ACCESS ROAD

6.1.2 Water

- The substation is situated in the vicinity of a natural drainage system hence the high water table in the area that allows water to pond (See figure 2).
- Under no circumstances must surface- or ground water be polluted or contaminated by oil, petrol, cleaning material, herbicides etc.
- Adequate oil containment precautions must be taken for example bund walls, oil catchment areas, oil drainage systems, holding dams, drip trays, etc.
- All storm water runoff must be managed efficiently so as to avoid storm water damage and erosion to adjacent properties (See figure 3).
- Drainage systems also need to be kept clean from debris at all times.

- In the event of an oil spill, the spill must be reported to the Department of Water Affairs and Sanitation if applicable, only when there is contamination of surface or ground water.
- The incident must be reported to the Field Service Manager and local Safety Representative as well as to the Environmental Management Section – Land Development within a period of 24 hours (Procedure for the effective Management of safety, health and environmental related incidents EPC 32-95 4.3).

FIGURE 2: WATERCOURSES IN THE SURROUNDING AREA

FIGURE 3: HIGH WATER TABLE AT SUBSTATION

FIGURE 4: WATER DAMMING AT MV POLE CODE 2 OUTSIDE SUBSTATION

6.1.3 Air quality: dust and fire breaks

- Burning of waste material such as vegetation and old cleaning materials resulting from construction activities at the site is strictly prohibited.
- Fire breaks where necessary must be planned in conjunction with relevant landowners and performed in accordance with the conditions of the surrounding veld.
- Tall weeds and grass in and around the substation and along the stone fire walk need to be removed.
- No fires to be made in private property or within the substation area.

6.2. Biological environment

6.2.1 Plant and Animal Species

- The area is mainly covered with different types of grasses used as grazing land for cattle.
- Candelabra plants were observed on site which indicates a high water table.
- The are also false parasol and yellow stainer marshroom plants prevalent in the surrounding which area poisonous plants (See figure 4)
- Bush clearing must be done according the Procedure for vegetation clearance and maintenance within overhead power line servitudes and on Eskom owned land (EPC 32-247).
- Identify all animal fatalities due to the site infrastructure such as bird collisions and small mammal injuries, and implement immediate action to minimise or avoid the problem.
- Wildlife interactions must be reported recorded and investigated and, after action is implemented to solve the problem, be followed-up to assess the effectiveness of the remedial measures taken.
- **Where possible, install bushing and surge arrestor covers to protect ground burrowing mammals and birds**

FIGURE 5: GRAZING CATTLE

FIGURE 6: POISONOUS STAINER MARSHROOM

6.3. Social environment

6.3.1. Social Aspects

- Property owners and local residents must be treated with respect and courtesy at all times.
- The culture and lifestyle of the community living in close proximity to the site and work site must be respected.
- Removal of agricultural products (fruit, vegetables, stock firewood) is prohibited.
- The substation was created during 1999 and is not yet older than 60 years. The old foundations outside the substation can be removed (See Figure 7).
- Exposed cables must be secured to protect the public from any contact incident (See figure 8).
- Environmental clauses must be included in contract documents for all contractors.
- Graves, archaeological sites and sites of historical interest in close proximity to an Eskom site or other work site must be protected and treated with respect.
- All complaints must be reported, recorded and investigated.

- Eskom sites should be evaluated in terms of their contributions to noise pollution and actions implemented to ensure conformance to legal requirements and taking into consideration the views of adjacent land users / owners.

FIGURE 7: OLD FOUNDATIONS OUTSIDE THE SUBSTATION HV YARD

FIGURE 8: EXPOSED CABLE AT POLE NUMBER COWO 1

Environmental incidents

- **The distribution procedure on reporting, recording, investigating, costing and following up of incidents/ accidents, DPC 34-350 (flash report system)**, 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 incidence occurring or being discovered.

Training

- The NEMA and Eskom SHEQ policy is mandating that resources used to carry out work that might result in environmental damage should be made available and adequate training should be provided to minimise the risk of environmental damage.

- 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. Personnel should be equipped with an oil spill kit to treat minor spills.
- All site personnel must have a basic level of environmental awareness training.
- The contractor must monitor the performance of construction workers to ensure that the points relayed during their introduction have been properly understood and being adhered to.

8. Impact assessment criteria

Refer to clause 4.3.1. of the EMS Procedure (34-260) for determining environmental significance.

The criterion below was used to assess the significance of the impacts. The significance ratings in relation to characteristics of Substation refurbishment activities are determined. These ratings are defined in terms of the magnitude, Likelihood, Business risks, Regulatory scrutiny and Stakeholder interest.

LIKELIHOOD	MAGNITUDE
High (3): Routine or ongoing activity or impact. Is known to have occurred on routine basis in the past. Impacts associated with the aspects are likely to emerge soon. Impacts are known. **Medium (2**): Periodically occurs once or twice a year. Impacts that are likely to occur within one year. **Low (1):** Very infrequent, every several years. Impacts associated with the aspects are several years away	**High (3):** Aspect has a recognized global environmental impact. Widespread or permanent ecological damage locally. Remediation would take longer than one year. Could result in a major public health hazard. **Medium (2):** Aspect could result in a major uncontained or sustained environmental release impacting on a regional or local environment only. Ecological damage can be remedied within one year. Health hazard to humans in the immediate vicinity, but not resulting in .critical or fatal. **Low (1):** Little or no ecological effect and no measurable impact on human health.

BUSINESS RISK/ BENEFITS	REGULATORY SCRUTINY	STAKEHOLDER INTEREST
High (3): Aspect poses significant risk. Early response necessary. Industrial initiatives underway/developed. May have major impact on competitive position. May have a significant impact on value of Eskom's assets. **Medium (2):** Aspect is likely to pose risk. **Low (1):** Aspect does not pose significant risk. No need for early response. No industry initiative associated with aspect. Does not threaten competitive position. Does not affect values of Eskom assets	**High (3):** Regulated by Legislation. High potential for regulatory action or limitations to operate (subject to regulatory inspections & historical compliance problems) **Medium (2):** Regulated & Legislated, however not a priority in terms of enforcement **Low (1):** Relatively unimportant, Little or no potential for regulatory action (e.g. not regulated; not a target of enforcement).	**High (3):** Very important to public and customers. Aspect has the potential to cause damage to corporate reputation. Ongoing dialogue has begun; negative perception, possibility for third party lawsuits. Customers expect superior performance by Eskom in managing this aspect. **Medium (2):** Important to the public and customers. The aspect is likely to cause damage to corporate reputation. **Low (1):** Relatively unimportant; the public is unaware or is aware but it is not an issue. No threat to corporate image. It is not an issue with customers.

SIGNIFICANCE OF THE IMPACTS:

The significance of the unmanaged and managed impacts has been assessed through consideration of the likelihood of the impact occurring, the magnitude over which the impact will be experienced, and the level of business risk, regulatory scrutiny and stakeholders interest the impact will have on the environment.

The formula for calculating the significant environmental impacts score is:

(Likelihood **X** Magnitude)

+ Regulatory scrutiny

+ Stakeholder interest

+ Business risk/benefit

The significant rating, as determined by the Operating unit, is as follows:

- 0 – 5: Low
- 6 -10: Medium
- 11 – 18: High

Impacts with a value greater than or equal to 11 will be considered as significant.

9. EMP Register for the refurbishment of Coaldale substation.

Activity	Aspect	Impact	Risk Rating before mitigation (L, M, H)	Regulatory requirement	Mitigation Measures	Risk Rating after mitigation (L, M, H)	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
Pre-construction, main site establishment	Site layout, planning and the loss of topsoil	Erosion, soil and water pollution	**Likelihood=2** **Magnitude=1** **Business risk=1** **Regulatory=2** **Stakeholder=1** **MEDIUM=7**	• The Constitution (Act No 108 of 1996) – Chapter 2, 24, 25 • National Water Act 36 of 1998. • National Environmental Management Act 107 of 1998 • Environmental Land Policy EPL 32-97 • Standard for passive fire protection in Distribution substation yards, DISASAAA0 • Way-leave Agreements, Servitudes	**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. **2.** Aspects such as slope and distance from water bodies must be taken into consideration to minimize erosion and pollution of surface water.**3.** Remove topsoil approximately 300 mm deep from establishment area and stockpile area.**4.** Provide containment and settlement facilities for effluent from concrete mixing and washing of cement bags .5.	**Likelihood=1** **Magnitude=1** **Business risk=1** **Regulatory=2** **Stakeholder=1** **LOW=5**	Incident reports, Complaints from I & AP's register, No soil contaminated with cementitious materials, oil or any other hydrocarbon	Contractor and/or project coordinator	Prior to construction	

Activity	Aspect	Impact	Risk Rating before mitigation (L, M, H)	Regulatory requirement	Mitigation Measures	Risk Rating after mitigation (L, M, H)	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
Disposal of insulation oil or hydrocarbons from any other oil containing equipment	Handling, disposal and storage	Pollution, Health and Business risk.	**Likelihood=1** **Magnitude=2** **Business risk=2** **Regulatory=2** **Stakeholder=2** **MEDIUM=8**	• National Environmental Management Act 107 of 1998 Chapt 7 Sec 28, 30 • Hazardous Chemical Substances Regulation • Eskom standard: Oil spill clean-up & rehabilitation **ESKASABT 0**. • Insulation oil manual • Eskom PCB standard, **ESKASAAO 2** • Waste Management Procedure, EPC 32-245	**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 *Maxi Wesi in Commercial Department-Assets Disposal (051-404 2606)* **3.** Records of quantity, disposal site, and disposal date & names of transporters must be kept and submitted to the Environmental section after project completion. **4.** Hazardous materials identified for disposal must not be stored for more than 60 days while preparations are made for final disposal.	**Likelihood=1** **Magnitude=1** **Business risk=1** **Regulatory=2** **Stakeholder=1** **LOW=5**	Disposal certificates, Records of disposal	Engineer/ Planner/ Project Coordinator, Procurement	Throughout project implementation	

Activity	Aspect	Impact	Risk Rating before mitigation (L, M, H)	Regulatory requirement	Mitigation Measures	Risk Rating after mitigation (L, M, H)	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
Handling oil containing vehicles, machinery and equipment on site.	Handling, spills	Soil, cement & possible water pollution.	**Likelihood=2** **Magnitude=2** **Business risk=2** **Regulatory=3** **Stakeholder=2** **HIGH=11**	• Insulation oil manual • Waste Management Procedure, EPC 32-245 • Eskom standard: Oil spill clean-up & rehabilitation, **ESKASABT 0** • National Environmental Management Act 107 of 1998 Chapt 7 Sec 28, 30 • Occupational Health & Safety Act 85 of 1993 • National Water Act 36 of 1998. Section 19 & 20	**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. **2.** There must be spill kits and trained personnel on spill kit use onsite. **3.** Emergency clean-up plans must be arranged prior, should there be major spill e.g. clean-up consultants. **4.** Drip trays must be placed under all vehicles, machinery and equipment on site 5. Service history of all vehicles, machinery and equipment must be verified	**Likelihood=1** **Magnitude=1** **Business risk=2** **Regulatory=1** **Stakeholder=1** **LOW=5**	Incident Flash Reports, Oil Spill investigation report	Eskom personnel and or contractor	Throughout project implementation	

Activity	Aspect	Impact	Risk Rating before mitigation (L, M, H)	Regulatory requirement	Mitigation Measures	Risk Rating after mitigation (L, M, H)	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
					before it is used.					
Storage of insulating oil and other hydrocarbons	Handling, spills, leaks	Possible pollution to water or soil.	**Likelihood=2** **Magnitude=2** **Business risk=2** **Regulatory=3** **Stakeholder=2** **HIGH=11**	• Hazardous Chemical Substances Regulation • National Environmental Management Act 107 of 1998 • National Water Act 36 of 1998. • Waste Management Procedure, EPC 32-245 • Eskom standard: Oil spill clean-up & rehabilitation, **ESKASABT0**	**1.** Storage containers must be of quality that will not result with spillage. **2.** Storage facilities must be in good condition that pollution will not occur.	**Likelihood=1** **Magnitude=1** **Business risk=2** **Regulatory=2** **Stakeholder=1** **MEDIUM=6**	Incident Flash Reports, Oil Spill investigation report	Eskom Personnel	Throughout project implementation	

Activity	Aspect	Impact	Risk Rating before mitigation (L, M, H)	Regulatory requirement	Mitigation Measures	Risk Rating after mitigation (L, M, H)	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
Transport of insulating oil and other hydrocarbons	Handling Oil spillage/ leaks from poor packaging. Road accident.	Possible pollution to road, soil, & water.	**Likelihood=2** **Magnitude=2** **Business risk=2** **Regulatory=3** **Stakeholder=2** **HIGH=11**	• Insulation oil manual • National Road Traffic Act 93 of 1996 • Hazardous Chemical Substances Regulation • Occupational Health & Safety Act 85 of 1993	**1.** There must be spill kits and trained personnel on spill kit use in the transportation vehicle. **2.** Emergency plans must be arranged prior to transportation, should there be major spill e.g. clean-up consultants, travel routes. **3.** Vehicles used for transportation must be road worthy. 4. No filling of diesel filled equipment on site.	**Likelihood=1** **Magnitude=1** **Business risk=2** **Regulatory=1** **Stakeholder=1** **LOW=5**	Incident Flash Reports, Oil Spill investigation report	Eskom personnel and or contractor	Throughout project implementation.	

Activity	Aspect	Impact	Risk Rating before mitigation (L, M, H)	Regulatory requirement	Mitigation Measures	Risk Rating after mitigation (L, M, H)	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
Selling of insulation oil and other hazardous materials generated from project	Transferring of assets and their risks. Mishandling, Illegal dumping.	Business risk, Pollution, health	**Likelihood=2** **Magnitude=2** **Business risk=2** **Regulatory=3** **Stakeholder=2** **HIGH=11**	National Environmental Management Act 107 of 1998 Chapt 7 Sec 28, 30 • Eskom PCB standard, **ESKASAAO 2** • Waste Management Procedure, EPC 32-245	**1.** The conditions, of oil and scrap sale, to the buyer and or contractor must be documented and agreed that the buyer will take reasonable measures to prevent environmental damages caused by the oil. **2.** The contactor and or buyer must clearly present the purpose for oil and scrap purchasing; such purpose must be assessed by Eskom personnel prior to sale or appointment of contractor/ buyer. **3.** All other assets to be sold must be referred to **Maxi Wesi** in **Commercial Department-Assets**	**Likelihood=1** **Magnitude=1** **Business risk=2** **Regulatory=1** **Stakeholder=1** **LOW=5**	Asset sales records, Quantity records, Inventory records	Project Coordinator, Procurement (Asset disposal)	Prior to sale/ contractor appointment	Selling/ Scraping of insulation oil and other materials generated form project

Activity	Aspect	Impact	Risk Rating before mitigation (L, M, H)	Regulatory requirement	Mitigation Measures	Risk Rating after mitigation (L, M, H)	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
					Disposal (051-404 2606) **4.** All equipment and material that could not be sold on site as scrap should be delivered to Eskom stores. **5.** All parts that can be recycled or reused can be transported back to stores.					
Transportation of waste	Road accident, Spills	Injuries, Fatalities, Damages, pollution	**Likelihood=2** **Magnitude=2** **Business risk=2** **Regulatory=3** **Stakeholder=2** **HIGH=11**	• National Road Traffic Act 93 of 1996 • Environmental Conservation Act 73 of 1989 • SANS 10228, 10232 – Transportation of Hazardous Materials.	**1.** Emergency plans must be arranged prior to transportation, should there be accidents e.g. travel routes, clean-up consultants. **2.** Vehicles used for transportation must be road worthy. **3.** During transportation, speed limits and all traffic signs must be adhered to. **4.** Materials must be safely	**Likelihood=1** **Magnitude=1** **Business risk=2** **Regulatory=1** **Stakeholder=1** **LOW=5**	Emergency plans, Incident flash report	Eskom personnel and or Contractor	Throughout project implementation	

Activity	Aspect	Impact	Risk Rating before mitigation (L, M, H)	Regulatory requirement	Mitigation Measures	Risk Rating after mitigation (L, M, H)	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
					and adequately contained **5.** Transportation of hazardous waste should be done only by registered hazardous waste transporters. **6.** There must be spill kits and trained personnel on spill kit use onsite.					
Replacement, installation and/ or removal of other equipment from the switching station	Scraping, handling, selling, storage, reuse and transporting of assets and their risks. Mishandling. Illegal dumping.	Business risk, health, pollution and illegal dumping	**Likelihood=1** **Magnitude=2** **Business risk=2** **Regulatory=2** **Stakeholder=1** **MEDIUM=7**	• National Environmental Management Act 107 of 1998 Chapt 7 Sec 28, 30	**1.** All equipment and material that could not be sold on site as scrap should be delivered to Eskom stores. **2.** All parts that can be recycled or reused can be transported back to stores. **3.** All other assets to be sold must be referred to *Maxi Wesi in Commercial Department- Assets*	**Likelihood=1** **Magnitude=1** **Business risk=2** **Regulatory=1** **Stakeholder=1** **LOW=5**	Asset sales records, Quantity records, Inventory records	Engineer/ Planner/ Project Coordinator, Procurement, Eskom personnel and or Contractor	Prior to sale/ contractor appointment, During isolator replacement, on going	

Activity	Aspect	Impact	Risk Rating before mitigation (L, M, H)	Regulatory requirement	Mitigation Measures	Risk Rating after mitigation (L, M, H)	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
					Disposal (051-404 2606)					
Training	Performing activities that could have negative environmental damages	Incidents and response measures	**Likelihood=2** **Magnitude=2** **Business risk=2** **Regulatory=3** **Stakeholder=2** **HIGH=11**	• National Environmental Management Act 107 of 1998	**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 situations and should be capable of using an Oil spill kit to treat minor spills.	**Likelihood=1** **Magnitude=1** **Business risk=2** **Regulatory=1** **Stakeholder=1** **LOW=5**	Training records, certificates	Project Coordinator, Contractor,	Throughout project implementation	

Activity	Aspect	Impact	Risk Rating before mitigation (L, M, H)	Regulatory requirement	Mitigation Measures	Risk Rating after mitigation (L, M, H)	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
Incidents	Reporting and response measures.	Pollution, damages, injuries	**Likelihood=2** **Magnitude=2** **Business risk=3** **Regulatory=2** **Stakeholder=2** **HIGH=11**	• Hazardous Chemical Substances Regulation • National Environmental Management Act 107 of 1998 • National Water Act 36 of 1998. • Eskom Emergency Planning Directive: **EST 32- 123** • Reporting Procedure **DPC 34-350**	**1.** Incidents (accidents, hazardous substance spills, etc.) and near-misses must be reported to the Safety Risk Management representative according to Eskom Distribution Standard for Reporting, Recording, Investigating, Costing and Follow-up of Incidents/Accidents: DPC 34-350.	**Likelihood=2** **Magnitude=1** **Business risk=1** **Regulatory=2** **Stakeholder=1** **MEDIUM=6**	Incident Flash report,	All Eskom personnel and or Contractor	Throughout project implementation	
General	Access	Unauthorised access to SITE, injuries and damages	**Likelihood=1** **Magnitude=1** **Business risk=2** **Regulatory=1** **Stakeholder=2** **MEDIUM=6**	• Fencing Act 31 of 1963 • Eskom Occupational Health and Safety Directive: **ESKADAA Q9**	**1.** Access to the site should be arranged with the TSO or Project Coordinator. **2.** Use existing roads/access roads. **3.** Gates found closed should be closed once again when	**Likelihood=1** **Magnitude=1** **Business risk=2** **Regulatory=1** **Stakeholder=1** **LOW=5**	Complaints register, Incident Flash report	Eskom personnel and or Contractor	Throughout project implementation	

Activity	Aspect	Impact	Risk Rating before mitigation (L, M, H)	Regulatory requirement	Mitigation Measures	Risk Rating after mitigation (L, M, H)	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
					passed through. **4.** There should be no climbing or crawling over or through a fence or gate without permission of the owner of land					
	Waste and hazardous substances	Pollution of private property of land owners and surrounding area	**Likelihood=2** **Magnitude=2** **Business risk=3** **Regulatory=3** **Stakeholder=2** **HIGH=12**	• Hazardous Chemical Substances Regulation • National Environmental Management Act 107 of 1998 • Environmental Conservation Act 73 of 1989 • Occupational Health & Safety Act 85 of 1993 • Atmospheric Pollution Prevention Act 45 of 1965 • Hazardous Substances	**1.** Refuse bins with tightly fitting lids must be made available on site. **2.** All waste including general litter must be removed from the site and disposed of at a licensed disposal site on a regular basis. **3.** No waste is to be left on site. **4.** All hazardous waste must be collected in marked receptacles in a demarcated area on site.	**Likelihood=1** **Magnitude=1** **Business risk=1** **Regulatory=2** **Stakeholder=1** **LOW=5**	Waste is managed properly and efficiently. Site is clean and tidy	Eskom personnel and or Contractor	Throughout project implementation	

Activity	Aspect	Impact	Risk Rating before mitigation (L, M, H)	Regulatory requirement	Mitigation Measures	Risk Rating after mitigation (L, M, H)	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
				Act 15 of 1973 • Environmental Land Management Policy EPL 32-97 • Waste Management Procedure, EPC 32-245	**5.** Hazardous waste must only be disposed of at hazardous disposal site registered to handle such waste. **6.** Records of quantity, disposal site, and disposal date and transporters must be kept and submitted to the Environmental section after project completion. **7.** Hazardous materials identified for disposal must not be stored for more than 90 days while preparations are made for final disposal. **8.** If possible, refuse must be recycled, reused or sorted. **9.** No solid waste is to be burned on site.					

Activity	Aspect	Impact	Risk Rating before mitigation (L, M, H)	Regulatory requirement	Mitigation Measures	Risk Rating after mitigation (L, M, H)	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
	Health and safety issues	Unhealthy living conditions and hazardous working conditions for workers	**Likelihood=2** **Magnitude=1** **Business risk=2** **Regulatory=1** **Stakeholder=2** **MEDIUM=7**	• The Constitution of RSA. • Occupational Health & Safety Act 85 of 1993 • Environmental Land Management Policy EPL 32-97	**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. **2.** A first aid kit must be close at hand on site at all times. **3.** Warning signs are to be set up in advance of road works for motorists. Warning signs are to be put up by electrical equipment and hazardous substances 4. Service slips of all ablution facilities must be kept on site.	**Likelihood=2** **Magnitude=1** **Business risk=1** **Regulatory=1** **Stakeholder=1** **LOW=5**	Incident Flash reports, Complaints register	Eskom personnel and or Contractor	Throughout project implementation	

Activity	Aspect	Impact	Risk Rating before mitigation (L, M, H)	Regulatory requirement	Mitigation Measures	Risk Rating after mitigation (L, M, H)	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
	Noise	Noise pollution from vehicles and workers	**Likelihood=1** **Magnitude=1** **Business risk=2** **Regulatory=1** **Stakeholder=1** **LOW=5**	• The Constitution of RSA. • Occupational Health & Safety Act 85 of 1993	**1.** Limit work to daylight hours (06:30 to 16:15) unless otherwise specified by Environmental Officer. **2.** Fit silencers on vehicles if necessary. **3.** Workers to conduct themselves in a respectable and/or acceptable manner.	**Likelihood=1** **Magnitude=1** **Business risk=2** **Regulatory=1** **Stakeholder=1** **LOW=5**	Complaints register	Eskom personnel and or Contractor	Throughout project implementation	
	Fire	Uncontrolled fires	**Likelihood=1** **Magnitude=2** **Business risk=2** **Regulatory=1** **Stakeholder=1** **MEDIUM=6**	• Distribution Fire Risk Management Standard: **DST 34- 132** • National Veld and Forest Fire Act 101 of 1998	**1.** No open fires to be allowed anywhere on site. **2.** Ensure that the site is equipped with adequate firefighting equipment and personnel are adequately trained. **3.** Fire extinguishers must be available on site.	**Likelihood=1** **Magnitude=1** **Business risk=2** **Regulatory=1** **Stakeholder=1** **LOW=5**	No outbreaks of fires due to negligence	Eskom personnel and or Contractor	Throughout project implementation	

Activity	Aspect	Impact	Risk Rating before mitigation (L, M, H)	Regulatory requirement	Mitigation Measures	Risk Rating after mitigation (L, M, H)	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
	Social	Complaints from interested and affected parties	**Likelihood=1** **Magnitude=1** **Business risk=2** **Regulatory=1** **Stakeholder=2** **MEDIUM=6**	• Constitution of the Republic of South Africa, Act No. 108 of 1996 section 7 to 39 - Bill of Rights • National Environmental Management Act 107 of 1998	**1.** Activities that may cause conflict with adjacent landowners, the local community must be avoided. **2.** Should conflict arise, it should immediately be reported to the ESKOM project manager. **3.** Properties, fences, locks or gates of Eskom and the adjacent landowners shall not be damaged when accessing the site.	**Likelihood=1** **Magnitude=1** **Business risk=2** **Regulatory=1** **Stakeholder=1** **LOW=5**	Complaints register	Eskom personnel and or Contractor	Throughout project implementation	
	Archaeological	Loss or damage to Archaeological artefacts	**Likelihood=1** **Magnitude=2** **Business risk=1** **Regulatory=2** **Stakeholder=1** **MEDIUM=6**	•Constitution of the Republic of South Africa, Act No. 108 of 1996 section 7 to 39 - Bill of Rights •National Environmental Management Act 107 of 1998	**1.** If any archaeological materials are found during this project, construction must cease immediately and the environmental officer (Earl Daniels) should	**Likelihood=1** **Magnitude=1** **Business risk=2** **Regulatory=1** **Stakeholder=1** **LOW=5**		Eskom personnel and or Contractor	Throughout construction stage.	

Activity	Aspect	Impact	Risk Rating before mitigation (L, M, H)	Regulatory requirement	Mitigation Measures	Risk Rating after mitigation (L, M, H)	Performance Indicators (KPI's)	Roles and Responsibility	Schedule	Date Completed/ Remarks
				National Heritage Resources Act 25 of 1998 Chapter 2, section 36	be contacted at 051 404 5759					
	Security	Loss of equipment and material and unauthorised entry to site camp	**Likelihood=1** **Magnitude=2** **Business risk=1** **Regulatory=2** **Stakeholder=1** **MEDIUM=6**	•Constitution of the Republic of South Africa, Act No. 108 of 1996 section 7 to 39 - Bill of Rights •National Environmental Management Act 107 of 1998	Fence and/or suitably secure main site office and material storage area.	**Likelihood=1** **Magnitude=2** **Business risk=1** **Regulatory=2** **Stakeholder=1** **LOW=5**	Incident Report	Eskom personnel and or Contractor	Throughout construction stage.	

10. Conclusion

This EMP highlights the environmental issues related to the **refurbishment of the Coaldale 88/22kV substation**. 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.

11. 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: 082 664 7755, 051 404 2310
- Any new environmental aspect identified during the project needs to be added to the EMP register above. Help in this regard can be obtained from the environmental section. Contact details: Earl Daniels (051) 404 5759
- Drive with moderate speed to minimise the risk of vehicular accidents.
- Limit the construction work to normal working hours to minimise the impact of noise on the residents in the area.

12. ANNEXURE A: GENERAL CONDITIONS, PROCEDURE: SCSPVABP7

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. If fires are lit on Eskom's property or in the construction camp, provision shall be made that no accidental fires are started. 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 Policy on Herbicides ESKPBAAD4.

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 to 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 (protected trees shall be dealt with in 2).

1.22. Inform the landowners and municipality prior to start of construction.

1.23. Place construction notice boards visibly in the area of where construction will take place.

Other Documents

UNIQUE IDENTIFIER	DOCUMENT NAME
EPL 32-727	SHEQ Policy
EPC 32-245	Waste Management Procedure
ESKADAAQ3	Emergency planning directive
SCSPVABO6	Incidents (accidents, hazardous substance spills, etc.) and near hits need to be reported to the Safety Risk Management representative as per the Distribution Standard for Reporting, Recording, Investigating, Costing and Follow-up of Incidents/Accidents.
	National Environmental Management Act 107 of 1998.
	Hazardous Chemical Substances Act
	Occupational Health & Safety Act
ESKASABT0	Oil spill clean-up and rehabilitation

13. ANNEXURE B: MAP LAYOUT

- **B1:Aerial Map Layout**

B1 Local Setting Map Layout 1: Coaldale 88/22kV substation

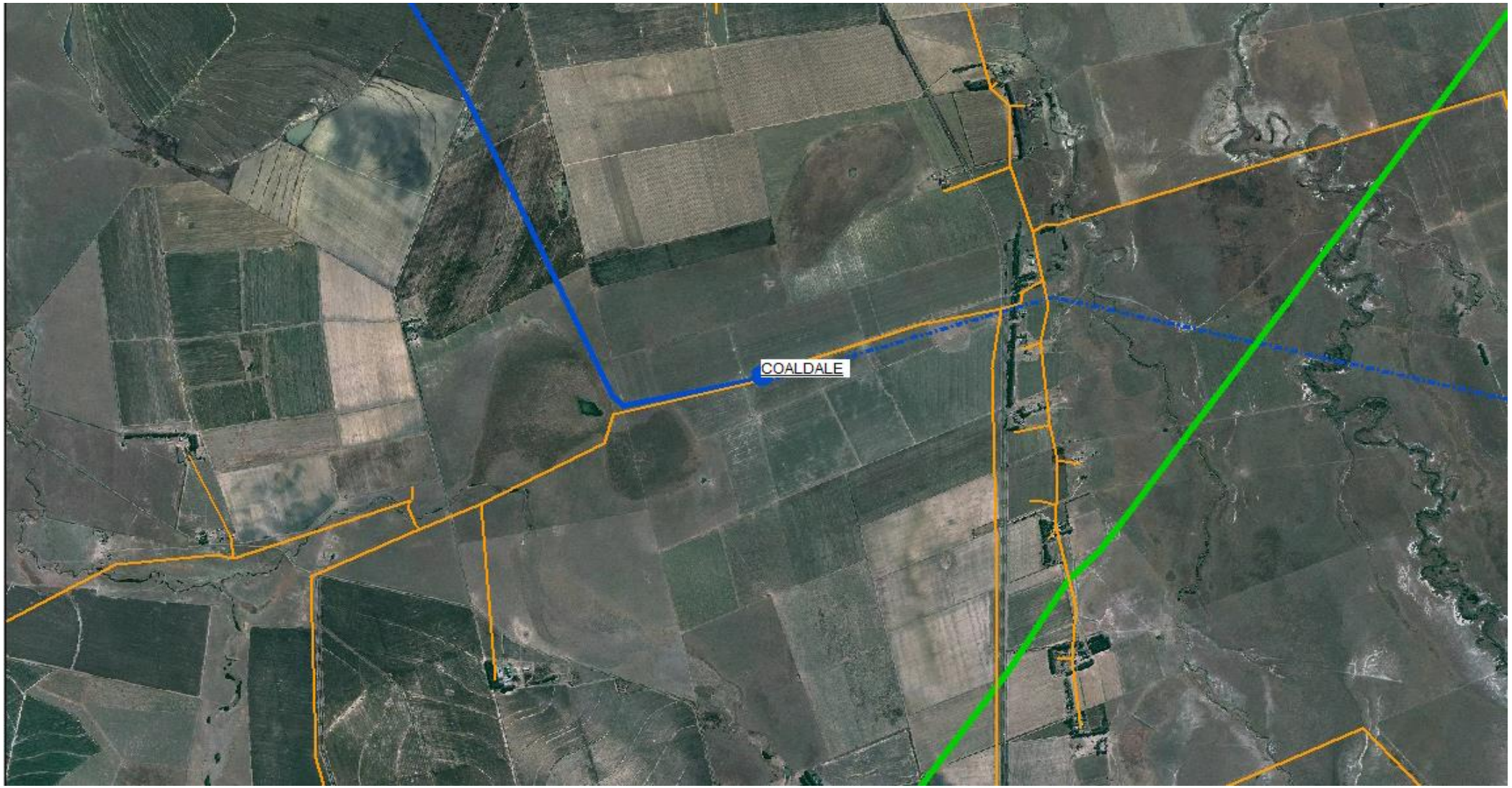


FIGURE 9: COALDALE 88/22KV SUBSTATION