

	Environmental Management Programme	Transmission
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Title: **INTERNAL ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE 66/11KV MULDERSVLEI SUBSTATION REFURBISHMENT PROJECT. SUPPLY, DELIVERY, INSTALLATION, TESTING AND COMMISSIONING OF 11KV SWITCHROOM.**

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Functional Area: **Environmental**

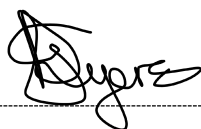
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Date: 19/02/2025

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Date: 27/02/2025

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Date: 2025/02/27

Project Details

Site Name: Muldersvlei

Project Title: THE 66/11KV MULDERSVLEI SUBSTATION REFURBISHMENT
PROJECT. SUPPLY, DELIVERY, INSTALLATION, TESTING AND
COMMISSIONING OF 11KV SWITCHROOM.

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Table of Content

Content	Page
1. Introduction.....	5
2. Supporting Clauses	6
2.1 Scope of the EMPr	6
2.1.1 Purpose	6
2.1.2 Applicability	7
2.1.3 Effective date.....	7
2.2 Normative/Informative References	7
2.2.1 Normative.....	7
2.2.2 Informative.....	8
2.3 Definitions	8
2.4 Abbreviations	9
2.5 Roles and Responsibilities	9
2.6 Process for Monitoring.....	11
2.7 Related/Supporting Documents.....	12
3. Technical Specifications of the line	12
3.1. Length of the Line:	12
3.2. Servitude width:	12
3.3. Tower parameters:.....	13
3.4. Tower design:	13
3.5. Major activities of the project:	13
3.6. Project execution area:	13
3.7. Site establishment:.....	14
3.8. Workshop and Equipment storage areas:	15
3.9. Storage of hazardous substances:	16
4. Document Content.....	16
4.1. Geographical Site Location and Environmental Condition	16
4.2 Public Involvement/Participation Process.....	17
4.3 Project Specific Scope of Work and Design	18
4.4. Muldersvlei 11kV surge arrestors installation Scope:	18
5. Acceptance.....	18
6. Revisions.....	19

CONTROLLED DISCLOSURE

7. Development Team 19

8. Acknowledgements 19

Table 1: Project Specific Environmental Controls..... 20

9. Conclusion..... 55

1. Introduction

In light of the ongoing refurbishment project at Muldersvlei Substation, it has been highlighted that there is a need for the supply and installation of a 11kV surge arrestors, which will include testing, commissioning and training of the Grid personnel. This project has been established because of the documented history of failures, including breaker malfunctions and incidents of explosions, due to aging infrastructure which pose significant safety risks to the personnel.

Based on the scope of the project, the information supplied by the project management team and the proposed area for construction related activities (highlighted on site), it appears that the proposed project will not have any significant environmental impacts, that may adversely affect the said environment. It is however vital that duty of care in terms of section 28 of the NEMA is adhered to when conducting activities on site. This will therefore take a concerted effort from the Contractor, and proper planning is of the utmost importance. All Landowners shall be informed of the project before work commences on their properties.

The NTCSA Environmental Advisor shall convey the contents of this document to the Contractor site staff and discuss the contents in detail with both the Project Manager and Contractor.

The Contractor shall take all the necessary precautions to avoid any environmental degradation or pollution.

Furthermore, good relations with Landowners need to be established and sustained. This will help in the solving of problems and the prevention thereof. It is essential that lines of communication be maintained and remain open to ensure proper and timeous reaction to complaints. The contact numbers of the NTCSA Environmental Practitioner and CEO shall be made available to Landowners. It should be noted that the reputation of both the Contractor and the National Transmission Company of South Africa (NTCSA) is at stake and should be the motivating factor for everybody involved to perform in excellence.

In addition, to the aforementioned, it shall, therefore, be noted that should new aspects and impacts arise in addition to what has been outlined below, this document may be amended, or the appointed Principal Contractor shall develop project and/or site-specific / activity method statements / safe work procedures that will detail specific aspects and impacts associated with such significant activities.

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2. Supporting Clauses

2.1 Scope of the EMPr

NB: This EMPr document only caters for the scope of work contained in it. Any activities outside the given scope of work will need to be addressed through the correct process (i.e., method statements or safe work procedure for any other significant activities).

2.1.1 Purpose

This EMPr has been compiled to address the potential environmental impacts that might occur during the implementation of the above-mentioned project. This document serves as the environmental specification to NTCSA personnel and Contractors with regards to addressing the environmental issues identified prior to and during the construction phase. It is the responsibility of the Project Manager (PM), Contractors and the Environmental Practitioners to ensure compliance with all the environmental requirements in this document, Environmental Requirements for Contractors and/or Suppliers Standard, as well as the relevant compliance obligations.

This EMPr should also ensure the sustainable management of the environment whilst the installation of the 11kV surge arrestors works is undertaken. It shall be noted that the works are only permitted to take place within the designated area, highlighted by the project management team. This EMPr must be viewed as a contractual document to which all NTCSA personnel and contractors involved should adhere to. This document shall be seen as part of the contract and supplementary to NTCSA's specifications for line construction.

The management programme must thus be part of the enquiry document to make the recommendations and constraints, as set out in this document, enforceable under the general conditions of contract.

The management programme has a long-term objective to ensure that:

- Environmental Management considerations are implemented from the start of the project;
- Precautions against damage and claims arising from damage are taken timeously; and
- The completion date of the contract is not delayed due to problems with Landowners arising during the course of the project.

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NTCSA would like a commitment from the NTCSA Project Manager and Contractor on the following issues:

- Take into consideration the Landowners as the works will take place within the substation and outside the substation adjacent to property;
- Always behave professionally on and off site;
- Ensure quality in all work done, technical and environmental;
- Resolve problems and claims arising from damage immediately to ensure a smooth flow of operations;
- To underwrite NTCSA's Environmental Policies and procedures at all times;
- To use this Environmental Management Programme for the benefit of all involved; and
- To preserve the natural environment by limiting degradation and pollution to the environment from actions conducted on site.

2.1.2 Applicability

This document shall apply to NTCSA Project Delivery and Contractors contracted to work on the **11kV surge arrestors instillation project at Muldersvlei Substation.**

2.1.3 Effective date

This EMP is effective as from the date of signature.

2.2 Normative/Informative References

Parties using this document shall apply the most recent and relevant edition of the documents listed in the following paragraphs.

2.2.1 Normative

[1] ISO 9001 Quality Management Systems

[2] ISO 14001 Environmental Management System

[3] 240-180100134 Environmental Requirements for Contractors and /or Suppliers

These documents are indispensable for the application of this document, i.e., documents to be used together with this document.

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2.2.2 Informative

- [4] National Environmental Management Act (NEMA) (Act No. 107 of 1998), and all amendments and supplementary listings and/or regulations.
- [5] Environment Conservation Act (ECA) (No 73 of 1989) and amendments.
- [6] National Environmental Management: Waste Act (NEMWA, Act 59 of 2008).
- [7] National Environmental Management: Biodiversity Act (NEM:BA) (Act No. 10 of 2004) and amendments.
- [8] National Forest Act (NFA) (Act No 84 of 1998).
- [9] National Veld and Forest Fire Act (Act No. 101 of 1998).
- [10] Conservation of Agricultural Resources Act, 1983 (CARA) (Act No. 43 of 1983) and amendments.
- [11] National Heritage Resources Act (Act 25 of 1999).
- [12] National Water Act (Act 36 of 1998).
- [13] The Occupational Health and Safety Act (Act No. 85 of 1993).
- [14] The National Fencing Act (Act No 31 of 1963) as amended by Act 108 of 1991.
- [15] The National Environmental Management: Protected Areas Act (Act No. 57 of 2003) and its Regulations.
- [16] The National Environmental Management: Air Quality Act (Act 39 of 2004).
- [17] South African National Standard (SANS) 10228 – The identification and classification of dangerous goods.

2.3 Definitions

Include all definitions applicable to this document, in alphabetical order. Explain all terms used, including documents, titles and departmental references that may cause confusion if not explained.

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Definition	Explanation
Construction work	The erection, maintenance, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure
	The installation, erection, dismantling or maintenance of a fixed plant where such work includes the risk of a person falling
	The construction, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system or any similar civil engineering structure
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
Works	The works to be executed in terms of the Contract

2.4 Abbreviations

Provide explanations of terms and abbreviations including documents, titles and departmental references that may cause confusion if not explained, and that are used in this document.

Abbreviation	Explanation
CEO	Contractor Environmental Officer
EMPr	Environmental Management Programme
HCS	Hazardous Chemical Substance
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NTCSA	National Transmission Company South Africa

2.5 Roles and Responsibilities

FUNCTION	ROLES AND RESPONSIBILITIES
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NTCSA Environmental Practitioner	• To ensure that the Environmental Management Programme (EMPr) for the project is compiled and approved. • To ensure that all conditions stipulated in the EMPr are met. • To conduct audit, monitor or provide assurance before, during and post construction.
NTCSA Environmental Advisor (NEA)	• Environmental advice and monitoring of EMPr implementation.
NTCSA Project Manager/ Site Manager	• Ensure that implementation of EMPr is executed as planned. • Ensure that conditions in this EMPr are fulfilled before the contractor occupies the site.
Contractor Environmental Officer (CEO)	• Ensures that all Sub-contractors (if any) working under the Principal Contractor abide by the requirements of the EMPr. • Be on site throughout the duration of the project and be dedicated to the project. • Ensure all staff are aware of the environmental requirements, conditions, and constraints with respect to all their activities on site. • Implementing the environmental conditions, guidelines and requirements as stipulated within the EMPr and Method Statements. • Attend and provide performance status at the project progress and Environmental site meetings. • Facilitate and undertake corrective actions where non-compliances are registered within the stipulated timeframes. • Assist the NTCSA environmental practitioner in maintaining all the site documentation. • Prepare and conduct site inspection reports and corrective action reports for submission to NTCSA.

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	• Keep a "Site Daily Diary of activities happening on site" to monitor and ensure that the receiving environment is suitably safeguarded against the identified potential impacts, and to ensure that the environmental management requirements are adequately implemented and adhered to during the execution of the project.
Contractor Project Manager/ Site Manager	• To provide all necessary supervision during the execution of the project. He/ She should be available on site all the time. • To appoint a competent Environmental Officer. • To ensure that implementation is conducted in an environmentally acceptable manner. • To fulfil all obligations as per the agreed contract. • To inform and educate all employees about the environmental risks associated with the different activities that should be avoided during the construction process and lessen significant impacts to the environment.

2.6 Process for Monitoring

All documents shall be kept on site and be available for monitoring purposes. Site inspections by an Environmental team or Project management team may require access to this documentation for auditing purposes. The documentation shall be signed by all parties to ensure that such documents are legal. Regular monitoring of site works by the CEO is imperative to ensure that all problems encountered are solved punctually and amicably. When the CEO is not available, the Site Supervisor shall keep abreast of all works to ensure no problems arise.

The following documentation shall be kept in a file on site:

10.1. Site Daily Diary.

10.2. Complaints Register.

10.3. Incidents and Non-Conformance Registers and Reports.

10.4. Records of all remediation / rehabilitation activities.

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10.5. Copy of this Environmental Management Programme and any other obligations (i.e., Service level agreements).

10.6. Photographic record (before, during and post construction).

10.7. Signed Project specific Method Statements / Procedures.

10.8. Inspections and Audit (monitoring and evaluation) Records.

10.9. Waste Records.

2.7 Related/Supporting Documents

This EMP shall be read in conjunction the following documents that provide the details of the project scope and/or requirements:

- 559-1433392535: NTCSA Single Source Justification Form for the 11kV surge arrestors installation at Muldersvlei Substation.

3. Technical Specifications of the line

3.1. Length of the Line:

There is no clear indication on the length of the line. However, the line runs between the Muldersvlei Substation and the wooden pole outside the substation. Which is located adjacent to the factory (Be Fresh Pty) nearby.

3.2. Servitude width:

Scanning of ground is required to locate existing cable on the ground from the new 11kV Building towards farmers feeder 4 wooden pole. Where cable ends, new joint will be installed joining old existing XLPE cable with new cable to be terminated onto the wooden pole. Trenching from substation, existing fence towards farmers feeder 4 wooden pole (outside the substation fence) will be required to install new cable, backfill, compact and rehabilitate after completion of work. Any work outside the servitude shall be negotiated with the relevant Landowner and approved by NTCSA.

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3.3. Tower parameters:

Not applicable.

3.4. Tower design:

Not applicable.

3.5. Major activities of the project:

The following activities are still to be performed:

- Establishment of contractor ablution facilities;
- Transportation of equipment, materials and personnel;
- Siemens Switchgear has been installed in the new 11kV building, the *Contractor* will install the outstanding equipment (surge arrestors, coupling connectors and arc sensors), onto the switchgear;
- Installation of joints and terminations on farmers feeders 1,2,3 and 4, as well as termination on transformer 1, for energising the AC board;
- Final inspection of installation and hand over to the Grid Lines and Servitudes Manager for operation; and
- Rehabilitation of disturbed areas and handover to Grid Environmental Manager.

3.6. Project execution area:

Construction activities are limited to the area as demarcated by NTCSA and shown on the site plans. Any area outside the NTCSA owned property or servitude area, which requires facilitation of access, construction camps or material storage areas, shall be negotiated with the Landowner and written agreements shall be obtained.

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Should water be required from private sources, a written agreement shall be established between the Contractor and the Landowner, and the required permission shall be obtained by the Contractor in writing and submitted to NTCSA. Should the Contractor be required to use water from a natural source (i.e., watercourse), the Contractor will obtain the required approvals from the competent authorities (e.g., DWS approval for GA/WUL, taking of water from the source that is owned by the City of Cape Town). The Contractor shall supply a method statement for the abstraction point activities. Strict control shall be maintained, and the CEO and the NTCSA Environmental Advisor shall regularly inspect the abstraction point and methods used.

3.7. Site establishment:

Site establishment shall take place in an organised manner and all amenities shall be installed at camp sites before the main workforce moves onto site. A method statement is required from the Contractor that includes the layout of the camp, management of ablution facilities and wastewater management. The Contractor camp shall have the necessary ablution facilities with chemical toilets where such facilities are not available at commencement of construction. The Contractor shall supply a wastewater management system that will comply with legal requirements and be acceptable to NTCSA.

The Contractor shall provide their own ablution facilities. Where NTCSA facilities are available the Contractor shall make use of such facilities where it is viable and possible. The contractor shall obtain written communication, to advise that permission has been granted to utilise the NTCSA facilities. The Contractor shall inform all site staff to the use of supplied ablution facilities and under no circumstances shall excretion and urinating be allowed other than in supplied facilities.

The Contractor shall supply waste collection bins where such is not available, and all solid waste collected shall be disposed of at a registered landfill site. Copies of disposal certificates shall be supplied to the NTCA (Environmental Advisor/ Project Manager). Under no circumstances may solid waste be burned on site.

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3.8. Workshop and Equipment storage areas:

It is advisable that all equipment and construction vehicle shall not be services on site except minor or emergency services. Where possible and practical, all minor maintenance of vehicles and equipment shall take place in the workshop area. The workshop area shall have concrete surface. During servicing of vehicles or equipment, a suitable drip tray shall be used to prevent spills onto the soil, especially where emergency repairs are conducted outside the workshop area. Leaking equipment shall be repaired immediately or be removed from site to facilitate repairs. All potentially hazardous and non-degradable waste shall be collected and removed to be disposed of at a registered landfill site.

Workshop areas shall be monitored for oil and fuel spills and such spills shall be cleaned and re-mediated to the satisfaction of the NTCSA Environmental Advisor. To this end a method statement is required and to be drafted by the Contractor, to show procedures for dealing with possible emergencies that can occur, such as fire and accidental leaks and spillages. The Contractor shall be in possession of an emergency spill kit that must be fully always equipped and available on site.

The following shall apply to spillages on site:

- All contaminated soil shall be removed and be placed in containers;
- Smaller spills can be treated on site;
- A specialist Contractor shall be used for the bioremediation of contaminated soil where the required remediation material and expertise is not available on site (Contractor to submit a rehabilitation plan for approval, drafted by a suitably qualified specialist, appointed by the contractor); and
- All spills of hazardous substances must be reported to the NTCSA.
- All incidents shall be handled as per the Eskom/ NTCSA Environmental Management Incident Procedure.

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3.9. Storage of hazardous substances:

All hazardous substances shall be stored in suitable containers and storage areas shall be bunded. This includes all carbon substances like fuel and oil. A register shall be kept on all substances and be made available during inspections. Areas shall be monitored for spills and any spills shall be contained, cleaned, and rehabilitated immediately. Any leaking containers shall be repaired or removed from site.

Storage areas shall display the required safety signs, depicting “No smoking”, “No naked lights” and “Danger”. Containers shall be clearly marked to indicate contents as well as safety requirements.

The contractor shall supply a method statement for the storage of hazardous materials.

4. Document Content

4.1. Geographical Site Location and Environmental Condition

Muldersvlei substation is located in a southern direction from the N1 highway and located in between the Joostenberg Vlakte and Klupmuts areas. The said substation has an approximate distance of 21,9 kilometres by road, from the Eskom Provincial Headquarters. The geographical co-ordinates of Muldersvlei Substation are **33°49'11.99"S; 18°48'19.53"E**.

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Figure 1: Locations of the Muldersvlei Substation.

4.2 Public Involvement/Participation Process

The potential environmental impacts associated with the proposed project are required to be considered in compliance with the Environmental Impact Assessment (EIA) Regulations of 2014 (as amended) published in Government Notice R982 to R985 on, in terms of Chapter 5 of the National Environmental Management Act, 1998 (Act 107 of 1998) (as amended). The above scope of work was assessed against the Listing Notices of the EIA Regulations 2014 and the following is noted:

- That the proposed project does not trigger any EIA related activities as per the above-mentioned regulations, as long as the related activities do not go beyond the scope of this EMPr, expand on related facilities/ infrastructure or conduct any additional listed activities, not previously authorised in the existing Environmental Authorisation, as the proposed project relates to the refurbishment of an existing line.

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- The public may be involved if project/activity triggers the requirements for any related permits/agreements e.g., water use licenses or heritage permits. In this instance, do not apply.

All the required replacement works will be done directly on the existing infrastructure; therefore, the project will not trigger the EIA listed activities.

4.3 Project Specific Scope of Work and Design

The details on the scope of works are outlined in the NTCSA Single Source Justification Form, the documents mention under 2.7 above. The following are the detailed scope of works.

4.4. Muldersvlei 11kV surge arrestors installation Scope:

- Site assessment: assess the location for optimal placement of the surge arrestors, connectors and arc sensors;
- Supply and install the 11kV surge arrestors, connectors, arc sensors including brackets and cables for the 3 x incomer panels, 3 x VT panels, 7 x feeder panels and two spare feeder panels;
- Perform testing to ensure the surge arrestors function correctly and meet specified performance criteria;
- Perform primary and secondary testing of panels;
- On 11kV cable works, install existing terminations, supply and install trifurcating kits, supply and install heat shrink joints, outdoor heat shrink terminations on farmers feeders, scanning for locating farmers feeder 4 cable, excavate and install free issued cable and backfill trench;
- Pressure test of farmer feeders cables, earthing of new minis and removal of old;
- Provide training for operating of switchgear, basic fault finding and basic maintenance; and
- Provide documentation of installation.

5. Acceptance

This document has been seen and accepted by:

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Name	Designation
Transmission Project Delivery	Project Managers

6. Revisions

Note: Start with the latest Revision History in the first row and go backwards.

Date	Rev.	Compiler	Remarks
February 2025	1	Grant Dyers	New Document

7. Development Team

The following people were involved in the development of this document:

- Grant Dyers
- Tshinanne Mutshatshi

8. Acknowledgements

Note: Acknowledgements to all those who had contribution to the standardization of the EMPr

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Table 1: Project Specific Environmental Controls

This section specifies standard mitigation measures to be followed by the parties responsible for environmental management during the construction of the project.

Note: An activity may have multiple aspects that might need to be looked at

No.	Activity	Aspect	Impact	Management Objective	Mitigation Measure	Measurable Targets	Frequency of Action	Responsible Party
1.	Project Contract and programme.	Tender Issuing/ Enquiry.	Non-compliance to legal requirements and non-conformance to other requirements and conditions set out in the EMPr.	- Contingencies for minimising negative impacts anticipated to occur during the construction/ refurbishment phase. - Ensure environmental awareness and formalise environmental responsibilities and implementation.	- The EMPr must be included as part of the tender documentation thereby making it part of the enquiry document to make the recommendations and constraints, as set out in this document, enforceable under the general conditions of contract. - A contractor shall acknowledge or complete Declaration on Environmental Requirements Pro-forma before commencement of the works.	Contract records Signed. Declaration on Environmental Requirements Pro-forma.	During tender stage.	- Project Manager/ Buyer/ Environmental Practitioner. - Project Manager.

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					A copy of this EMPr must be always available at the works site. The Contractor shall ensure that all the personnel on site, sub-contractors and their teams, suppliers, etc. are familiar with and understand the specifications contained in this EMPr.		During construction/ refurbishment.	CEO
2.	Method Statements.	Compilation of project specific documentation.	Non-compliance to legal and other requirements and conditions set out in the EMPr.	Contingencies for minimising negative impacts anticipated to occur during the construction/ refurbishment phase.	• All activities which require method statements may only commence once the method statements have been approved by the NTCSA PM and Environmental Practitioner. • Where applicable, the contractor shall provide job-specific training on an ad hoc basis when workers are engaged in activities, which require Method Statements. • It must be ensured that Eskom/ NTCSA Policies, Guidelines and Standards	• Approved Method Statements and relevant documents. • Training records.	• Before commencement of activities. • As and when required.	• Contractor • Contractor

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					are consulted to ensure that Method Statements meet requirements as set out in those documents.			
3.	Site demarcation and development.	Allocation/ demarcation of site.	Legal contravention, and damage to the environment.	Contingencies for minimising negative impacts anticipated to occur during the construction/ refurbishment phase.	- The Substation team (i.e., Environmental Department or Property Management Team) shall be consulted before site demarcations and development, including the camp site. - All conditions contained in this EMPr must be adhered to and considered when site demarcation and development takes place. - No activities will be allowed outside the demarcated area. It is also advisable for not allowing the Contractor to establish their site camp inside the substation as it attracts some security concerns (i.e., theft of equipment).	Activities to take place within the demarcated area.	- Before commencement of construction/ refurbishment activities on site. - As and when required.	Contractor
4.	Environmental Awareness Training.	Conducting Environmental Awareness Training.	Lack of understanding by workforce regarding the	Environmental training and awareness of construction/	All staff should receive environmental awareness/ training.	Environmental impact because of construction/ refurbishment	On commencement of construction/	CEO

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**INTERNAL ENVIRONMENTAL MANAGEMENT PROGRAMME
FOR THE 66/11KV MULDERSVLEI SUBSTATION
REFURBISHMENT PROJECT. SUPPLY, DELIVERY,
INSTALLATION, TESTING AND COMMISSIONING OF 11KV
SWITCHROOM.**

Unique Identifier: 240-131566734
Revision: 1
Page: 23 of 55

			responsibilities in terms of this EMPr. Legal contravention, damage and pollution to the environment and private property.	refurbishment staff contribute to minimisation of the occurrence of environmental impact to the work area.	- All new staff coming onto site shall receive environmental awareness/training which shall include the impact of their activities and responsibilities on environmental management system. - Refresher environmental awareness/training shall be available as and when required. - All staff shall be made aware of the conditions and controls linked to the EMPr. - All staff are made aware of their individual roles and responsibilities in achieving compliance with the EMPr. - The Contractor shall erect and maintain information posters at key locations on site.	activities is minimised through the development of effective environmental awareness training material and execution of environmental awareness training for all staff.	refurbishment activities. As and when required.	
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|--|--|--|--|--|---|--|--|--|
| | | | | | <ul style="list-style-type: none">• Wastewater management procedures.• Water usage and conservation.• Solid waste management procedures.• Sanitation procedures.• Fire prevention; and Disease prevention.• A record of all environmental awareness undertaken as part of the EMPr must be available.• Educate workers on the dangers of open and/or unattended fires.• Environmental awareness/training should include as a minimum the following:<ul style="list-style-type: none">- Description of significant environmental impacts, | | | |
|--|--|--|--|--|---|--|--|--|

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					actual or potential, related to their work activities; - Mitigation measures to be implemented when carrying out specific activities; - Emergency preparedness and response procedures; - Procedures to be followed when working near or within sensitive areas; - Wastewater management procedures; - Water usage and conservation; - Solid waste management procedures; - Sanitation procedures; - Fire prevention; and - Disease prevention. • A record of all environmental awareness undertaken as part of the EMPr must be available.			
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					• Educate workers on the dangers of open and/or unattended fires. • A staff attendance registers of all staff to have received environmental awareness training must be available. • Course material must be available and presented in appropriate languages to ensure that all staff can understand.			
5.	Site Establishment.	Construction of a site camp (if applicable)	• Damage to the environment by unnecessary clearing the surface/ ground (vegetation). • Land pollution/ contamination. • Chemical pollution caused by vehicle oils, grease, or solvents.	Ensure that environmental issues are taken into consideration in the planning and construction of site establishment.	• A site establishment method statement shall be provided by the contractor prior to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location of key infrastructure and services (where applicable), including but not limited to offices, vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous materials storage areas	Impact to the environment during site establishment is minimised and the development footprint are kept to demarcated development area.	When the project commences.	Contractor

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					(including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas, ablution facilities, waste and wastewater management. • Location of construction camps must be carefully considered and approved by the Substation/ Grid Team and NTCSA Projects Delivery to ensure that the site does not impact on sensitive areas. • Sites should be located where possible on previously disturbed areas. • The construction camp shall be fenced where necessary.			
6	Environmental emergencies.	Response to all types of environmental emergencies.	• Land, water pollution/ contamination. • Chemical pollution caused	Emergency procedures are in place to enable a rapid and effective response to all types of	• Compile an Emergency Response Plan prior to the commencement of the proposed project.	• All emergency situations are managed in accordance with the	• On commencement.	Contractor/ CEO

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			by vehicle oils, grease or solvents.	environmental emergencies.	- The Emergency Plan must deal among other things with accidents harsh weather conditions, disasters, wildlife interactions, potential spillages and fires in line with relevant legislation. - All staff shall be made aware of emergency procedures as part of environmental awareness training. - The relevant local authority shall be made aware of a fire as soon as it starts. - In the event of emergency necessary mitigation measures to contain the spill or leak shall be implemented.	emergency procedures. Rapid and effective response to all types of environmental emergencies.	As and when required.	
7.	Hazardous Chemical Substances (incl. oil).	Storage, handling, use and disposal of hazardous substances.	Chemical, land and water pollution/contamination.	- Prevention of pollution of the environment. - Minimise chances of transgression	The contractor must provide method statements for the "handling & storage of hazardous chemical substances", "fire", and "emergency spills procedures".	- No pollution of the environment. - No litigation due to	Daily	Site Supervisor/ CEO/ SHE Representative.

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			• Damage to the environment.	of the acts controlling pollution.	• The substances must be confined to specific and secured areas within the contractor's site, and in a way that does not pose a danger of pollution even during times of high rainfall. These areas must be imperviously banded with adequate containment (at least 1.5 times the volume of the fuel) for potential spills or leaks. • Drip trays (minimum of 10cm deep) must be placed under all vehicles, including plant and equipment that stand for more than 24 hours. Vehicles suspected of leaking must not be left unattended, drip trays must be utilised. • The surface area of the drip trays will be dependent on the vehicle and must be large enough to catch any hydrocarbons	transgression of pollution control Acts. • No complaints from Interested & Affected Parties (I&APs). • Method statements		
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					that may leak from the vehicle/plant while stationery. • All spilled hazardous substances must be contained in impermeable containers for removal to a licensed hazardous waste management facility/ site, (this includes contaminated soils, and drenched spill kit material). • Safety Data Sheets (SDS) must be prepared for all hazardous substances on site and supplied by the supplier where relevant. SDS's must be updated as required. • Containers must be clearly marked to indicate contents, quantities and safety requirements. • Materials such as fuel, oil, paint, herbicide and insecticides must be sealed and stored in			
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					bunded areas or under lock and key, as appropriate, in well-ventilated areas. • All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet. • No smoking must be allowed within the vicinity of the hazardous storage areas. • Adequate fire-fighting equipment must be made available at all hazardous storage area. • An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken.			
8.	Eating Area	Management of eating areas.	• Incorrect handling and management of waste.	• Control potential influx of vermin and flies.	• The Contractor shall, in conjunction with the Eskom/ NTCSA Environmental Practitioner or PM designate restricted	• No visual sign of vermin and flies.	Daily	Contractor

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			Littering of waste.	Neat workplace and hygienic environment.	- eating areas for eating during normal working hours. - Adequate closed refuse bins must be provided and cleaned daily. - Litter (even if originating outside the camp) and concrete bags etc. must be picked up daily and put into suitably closed bins.	No complaints from I&AP's.		
9.	Waste Management	Handling and management of waste.	Inappropriate storing, handling and unsafe disposal of at an unrecognised/unregistered waste facility.	To avoid, manage and mitigate potential impacts to the environment caused by the incorrect storage, handling and disposal of general and hazardous solid waste.	- All measures regarding waste management shall be undertaken using an integrated waste management approach. - Sufficient, covered waste collection bins (scavenger and weatherproof) shall be provided. - A suitably positioned and clearly demarcated waste collection site shall be identified and provided.	Solid waste management is undertaken in accordance with relevant national and provincial legislation and local by-laws; as well as Transmission Industry Waste Management Plan.	Daily	Contractor

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					• The waste collection site shall be maintained in a clean and orderly fashion. • Waste shall be segregated into separate bins and clearly marked for each waste type. • Staff shall be trained in waste segregation. • Recycling of waste types shall be maximised. • Bins shall be emptied regularly. • General waste shall be disposed of at recognised and registered waste disposal sites/ recycling company. • Hazardous waste shall be disposed of at a registered waste disposal site. • Certificates of disposal for general, hazardous, and			
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					recycled waste shall be maintained and submitted to NTCSA together with the performance reports. Under no circumstances shall any waste be disposed of, burned, or buried on site. All waste shall be treated or disposed of at licensed waste management facilities.			
10.	Sanitation	Management of ablution facilities.	Risk of diseases and contamination/pollution to the environment.	An abundant supply of suitably located clean and well-maintained toilet facilities are available to all staff to minimise the risk of disease and impact to the environment.	- Mobile chemical toilets shall be made available onsite if no other ablution facilities are available. - Ablution facilities and or mobile toilets shall be always used and no indiscriminate use of the veld for the purposes of ablutions shall be permitted under any circumstances. - Ablution facilities shall be located within 100 m of any workplace and shall be numerous enough to	No pollution or disease arises on-site because of sanitation facilities or lack thereof.	Daily	Contractor

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					accommodate the workforce (minimum requirement of 1:15 workers on site). - Where mobile chemical toilets are required, the following shall be ensured: a) Toilets are located no closer than 100 m to any watercourse or water body. b) Toilets are secured to the ground to prevent them from toppling due to wind or any other cause. c) No spillage occurs when the toilets are cleaned or emptied, and the contents are managed in accordance with the EMP. d) Toilets have an external closing mechanism and are closed and secured from the outside			
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CONTROLLED DISCLOSURE

					when not in use to prevent toilet paper from being blown out. - e) Toilets are emptied before long weekends and workers holidays and shall be locked after working hours. - f) Toilets are serviced regularly, and a copy of the waste disposal certificates shall be maintained and submitted to NTCSA Project Delivery Team.			
11.	Dust Management.	Management of dust emission (if applicable).	Generation of dust emissions.	To reduce dust emissions during construction activities.	• Take all reasonable measures to minimise the generation of dust as a result of construction. • Removal of vegetation shall be avoided until such time as soil stripping is required and similarly exposed surfaces shall be re-vegetated or stabilised	Minimal occurrence of dust due the adherence of EMPr requirements.	Daily	Contractor

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					as soon as is practically possible. • Excavation, handling and transport of erodible materials shall be avoided under high wind conditions or when a visible dust plume is present. • During high wind conditions, the responsible person will evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level. • Where possible, soil stockpiles shall be in sheltered areas where they are not exposed to the erosive effects of the wind. Where erosion of stockpiles becomes a problem, erosion control measures shall be			
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					implemented at the discretion of the responsible person.			
12.	Noise Management.	Management of noise levels.	Unnecessary high noise levels.	To prevent unnecessary noise to the environment by ensuring that noise from construction activity is mitigated.	• All construction vehicles must be in a good working order to reduce possible noise pollution. • Noise reduction is essential, and Contractors shall endeavour to limit unnecessary noise, especially loud talking, shouting or whistling, radios, sirens or hooters, motor revving, etc. The use of silent compressors is a specific requirement. • Noisy activities shall take place only during normal working hours. • The surrounding Eskom/ NTCSA management and landowners must be informed in writing within 24 hours prior to any planned activities that will be unusually noisy or any other activities that could	Noise management is undertaken in accordance with SANS 10103 and requirements of the EMPr. No complaints from surrounding landowners.	Daily	Contractor

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**INTERNAL ENVIRONMENTAL MANAGEMENT PROGRAMME
FOR THE 66/11KV MULDERSVLEI SUBSTATION
REFURBISHMENT PROJECT. SUPPLY, DELIVERY,
INSTALLATION, TESTING AND COMMISSIONING OF 11KV
SWITCHROOM.**

Unique Identifier: 240-131566734
Revision: 1
Page: 39 of 55

					reasonably have an impact on the adjacent sites. These activities could include, but are not limited to, blasting, piling, use of pneumatic jackhammers and compressors.			
13.	Water Management.	Water uses, Stormwater and wastewater management (if applicable).	Pollution and contamination of the watercourse environment and or aquatic ecosystems (i.e., wetlands).	To avoid, manage and mitigate potential impacts to the environment caused by deluge water, wastewater discharge refurbishment activities.	• Appropriate pollution control facilities necessary to prevent discharge of water containing polluting matter or visible suspended materials into watercourses or water bodies shall be designed and implemented. • All watercourses must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities. • In the event of a spill, prompt action must be	Wastewater management is undertaken in accordance with relevant national and provincial legislation and local by-laws.	Daily	Contractor and Eskom/ NTCSA

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					taken to clear the polluted or affected areas. • There must not be any impact on the long-term morphological dynamics of watercourses. • When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: - a) Water levels during the period of construction. No altering of the bed, banks, course, or characteristics of a watercourse; - b) During the execution of the works, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented			
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		Release of water from the tanks.	Flooding of equipment and surrounding areas	To avoid damage to properties accidental release of deluge water into stormwater drains, as it can be having a lot of pressure and in high volume.	e.g., including ensuring that construction equipment is well maintained; - c) Where earthwork is being undertaken near any watercourse, slopes must be stabilised using suitable materials, i.e., sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and - d) Appropriate rehabilitation and re-vegetation measures for the watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows.	Consideration of water management legislative requirements (national, provincial and bylaws)	Before and during the release of water from deluge tanks.	
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					• Slow release of water into stormwater drains to avoid flowing. • Inform downstream water user of a possible high-volume increase of water flow. • Water may be tested for any contamination before release. • Should there be a possibility, water may be directed for a different use in the project or around the substation.			
14.	Dismantling of old equipment (The existing Pipeline and concrete foundations)	Storing and handling of old equipment	• Damage to the environment • Chemical Pollution/contamination (i.e., release of oil)	Impact to the environment to be minimised during the dismantling, storage, and disposal of old equipment commissioning.	• All old equipment removed during the project must be stored in such a way as to prevent pollution of the environment. • Oil containing equipment must be stored to prevent leaking or be stored on drip trays.	All assets and scrap material to be disposed of accordingly.	When dismantling takes place	Contractor

CONTROLLED DISCLOSURE

			Improper disposal of the equipment.		- All scrap steel must be stacked neatly, and any disused and broken insulators must be stored in containers. - Oil to be drained /decanted shall be contained in such a way that it does not leak to the ground. - Once material has been scrapped and the contract has been placed for removal, the disposal Contractor must ensure that any equipment containing pollution causing substances is dismantled and transported in such a way as to prevent spillage and pollution of the environment. - The Contractor must also be equipped to contain and clean up any pollution causing spills.			
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					• Disposal of unusable material must be at a registered waste disposal site and a certificate of safe disposal must be obtained. • Asset disposal team shall be contacted to see if there are any material that may not need to be disposed immediately.			
15.	Workshop, equipment maintenance and storage	Management of workshop and storage area (if applicable).	Damage to the environment. Chemical Pollution/contamination.	The control operation, maintenance and storage of equipment prevents soil, surface water and groundwater contamination.	• Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area. • During servicing of vehicles or equipment, especially where emergency repairs are affected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil. • Leaking equipment must be repaired immediately or be removed from site to facilitate repair.	Soil, surface water and groundwater contamination are prevented as due to adherence of EMP requirements.	Daily	Contractor

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					• Workshop areas must be monitored for oil and fuel spills and such spills. • Appropriately sized spill kit kept on site relevant to the scale of the activity taking place shall be available. • The responsible operator of equipment must have the required training to make use of the spill kit in emergency situations. • The workshop area shall have a bunded concrete slab that is sloped to facilitate runoff into a collection sump or suitable oil / water separator where maintenance work on vehicles and equipment can be performed.			
16.	Heritage Resources Management.	Heritage Resources Management (if applicable).	Destruction of the heritage resources.	• Limit the destruction of the country's heritage resources.	• In terms of the National Heritage Act, 1999 (Act No. 25 of 1999), construction personnel must be alert and must inform the local authorities	No destruction of or damage to known archaeological sites.	Daily	Contractor

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				• The preservation and appropriate management of new archaeological finds should these be discovered during construction.	should they come across any findings of heritage resources within 24 hours if the area has been removed. • Should any archaeological artefacts be exposed during construction activities, work on the area where the artefacts were found shall cease immediately and the South African Heritage Resources Agency shall be notified within 24 hours. • Under no circumstances shall archaeological artefacts be removed, destroyed, or interfered. • Any archaeological sites exposed during construction activities must not be disturbed prior to authorisation by the South African Heritage Resources Agency or the appropriate provincial heritage resource agency.			
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					- No building, structure or fitting on the site older than 60 years shall be removed or demolished without the appropriate license from SAHRA. - Identify, demarcate and prevent impact to all known sensitive heritage features on site.			
17.	Access Roads.	Management and maintenance of access roads (if applicable.	Damage to the environment through the unplanned and unrestricted movement of vehicles on site.	Minimise loss of topsoil and enhancement of erosion. Minimise fauna and flora displacement by destruction of natural habitats.	- Existing roads and services within the Substation and/ or servitude must be utilised as far as possible. - No unauthorised access is permitted. - Any damage or degradation will be investigated, and fines issued, the affected areas must be immediately rehabilitated. - No driving off from the marked roads is permitted and designated parking	No erosion on access roads after completion of construction/ refurbishment works. No loss of topsoil due to runoff water on access roads.	Daily	Contractor

CONTROLLED DISCLOSURE

					areas must be identified and demarcated with applicable signage. Maximum use of both existing servitudes and existing roads must be made to minimize further disturbance through the development of new roads.			
18.	Fauna/Animal Management.	Fauna/Animal Management (if applicable).	Disturbance to fauna.	Minimise disturbance to animals. Minimise interruption of breeding patterns of birds. Minimise destruction of habitat.	- Focus on animals such as snakes and other reptiles that often generate fear by telling the labour force how to move safely away and to whom they report the sighting of such animals. - The labour force should also be informed on where snakes most often hide so that they can be vigilant when lifting stones etc. - Employees must be trained on how to deal with fauna species as intentional killing will not be tolerated as well as not to disturb wildlife within the working area precinct.	No measurable or visible signs of habitat destruction.	Daily	Contractor

CONTROLLED DISCLOSURE

**INTERNAL ENVIRONMENTAL MANAGEMENT PROGRAMME
FOR THE 66/11KV MULDERSVLEI SUBSTATION
REFURBISHMENT PROJECT. SUPPLY, DELIVERY,
INSTALLATION, TESTING AND COMMISSIONING OF 11KV
SWITCHROOM.**

Unique Identifier: 240-131566734
Revision: 1
Page: 49 of 55

19	Flora/ Vegetation Management.	Maintenance and management of vegetation (if applicable).	Damage to protected and/or endangered species.	Minimal disturbance to vegetation where such vegetation does not interfere with construction/ refurbishment in terms of approvals from the relevant authority.	- Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species. - The contractor must rehabilitate the construction camp and any other disturbed areas once construction/ refurbishment activities have terminated. Compacted areas will be ripped and mulched to ensure recovery of the natural vegetation cover. - Once construction/ refurbishment is complete, rehabilitation of un-built areas must be undertaken to restore the aesthetic & ecological value of the area. - Active re-vegetation must take place with indigenous vegetation and as prescribed by the client and/or property owner.	- The footprint has not exceeded the agreed boundaries. - All damaged areas successfully rehabilitated.	- As and when required. - On completion of the project construction activities.	Contractor
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20.	Fire Management.	Management of fires.	Spread of uncontrolled/unattended fires.	To minimise the risk of fire during construction.	- Designate smoking areas where the fire hazard could be regarded as insignificant. - Educate workers on the dangers of open and/or unattended fires. - No open fires shall be allowed on site under any circumstances. - Firefighting equipment shall be available on vehicles located on site. - Contact numbers for the Fire Prevention Agency (FPA) and emergency services must be communicated in environmental awareness training and displayed at a central location on site.	- Fire prevention measures are carried out in accordance with the National Veld and Forest Fire Act, 101 of 1998. - Emergency Preparedness and Response Plan.	- Throughout the construction/refurbishment phase. - When necessary.	Contractor
21.	Installation of Equipment.	Storage, installation, and handling of equipment.	Improper installation,	Impact to the environment to be minimised during	Management of dust shall be conducted in	Impact to the environment is minimised	Daily	Contractor

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			handling and storage.	the installation of equipment.	accordance with Dust management section. • Management of equipment used for installation shall be conducted in accordance Workshop equipment maintenance and storage section. • Management hazardous substances and any associated spills shall be conducted in accordance with Hazardous substances section.	through adherence to EMPr requirements.		
22.	Rehabilitation	Rehabilitation of the construction site (if applicable).	Failure to rehabilitate disturbed areas. Improper/ inadequate rehabilitation. Incorrect use of rehabilitation techniques.	Areas disturbed during construction/ refurbishment are returned to a state that approximates the state which they were before disruption.	• All areas disturbed by construction/ refurbishment activities shall be subject to landscaping and rehabilitation. • Where new access roads have crossed • cultivated farmlands, that lands must be rehabilitated by ripping. • Indigenous species must be used for with species	• Landscaping and rehabilitation are undertaken in accordance with the approved rehabilitation plan/ specification. • Areas disturbed during the	• On completion of construction/ refurbishment • During rehabilitation phase	Contractor

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					and/grasses to where it compliments or approximates the original condition. • Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is carefully selected to ensure the following: - a) Annual and perennial plants are chosen; - b) Pioneer species are included; - c) Species chosen must be indigenous to the area with the seeds used coming from the area; - d) Root systems must have a binding effect on the soil; and - e) The final product must not cause an ecological imbalance in the area.	development phase are returned to a state that approximates the original condition.		
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CONTROLLED DISCLOSURE

**INTERNAL ENVIRONMENTAL MANAGEMENT PROGRAMME
FOR THE 66/11KV MULDERSVLEI SUBSTATION
REFURBISHMENT PROJECT. SUPPLY, DELIVERY,
INSTALLATION, TESTING AND COMMISSIONING OF 11KV
SWITCHROOM.**

Unique Identifier: 240-131566734
Revision: 1
Page: 53 of 55

23	Prevention of Disease.	Health and wellness of the workforce.	Spread of diseases.	Prevent litigation due to infestation of livestock/ game.	- The Contractor shall take all the necessary precautions against the spreading of disease, especially under livestock/ game. - The workforce shall also be sensitised to the effects of sexually transmitted diseases, especially HIV AIDS. - The Contractor must ensure that information posters on AIDS are displayed in the Contractor Camp area. - Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable. - Medical support must be made available. Provide access to Voluntary HIV	No complaints from Stakeholders/ I&APs.	- Daily - As and when required	Eskom/ NTCSA and Contractor's OHS
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					Testing and Counselling Services.			
24	Social interaction.	Substation property, private landowners and all public members.	Access to the substation and the servitude may be affected should there be any incidents like dust generation, disturbances of public property.	- Ensure that identified access road has minimal dust generation and loitering. - All gates shall be kept closed as they are found.	- By conducting risk assessments prior to the start of projects relates to access. - To obtain written consent from property owner, stipulating any specific requirements from the property owner. - Avoid interaction with landowners' activities. - No fires to be made anywhere. use of existing access road.	No Legal Contraventions / lawsuits / claims	Duration of the project	Project Manager / Contractor

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9. Conclusion

This Environmental Management Programme document should be used as an on-site reference document during all phases of this project, and auditing should take place to determine compliance with this EMP. Parties responsible for transgression of this EMP should be held responsible for any rehabilitation that may need to be undertaken. Parties responsible for environmental degradation through irresponsible behaviour / negligence should receive penalties as per contractual conditions Environmental Requirements for Contractors and/or Suppliers.

Process facilitated the identification of relevant and practical mitigation measures, which may be used by the construction team and NTCSA to draw up and respond to tender documentation. It is thus a key to this process that this document is included during tendering to allow all potential bidders for this work to seriously consider and cost for such mitigation. This will ensure that the document receives the necessary buy in that it requires from the outset of the project. Should there be any additional aspects arising from the activities not identified in this document, a Contractor shall then develop the method statements which will then be reviewed by the Client for acceptance.

To have records of environmental incidences and the handling thereof, it is suggested that incident logs be filled in by the CEO. The project manager and the NTCSA project Environmental Advisor needs to be informed of such incidents, and further actions need to be taken, should the need arise. This means full consideration of NTCSA Environmental Incident Management Procedure and legal requirements.

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