DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED DEVELOPMENT OF THE NEW TRANSNET RIETKUIL SUBSTATION IN RIETKUIL, MPUMALANGA PROVINCE.

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Animals Protection Act of 1962 (Act No. 71 of 1962	APA
Atmospheric Pollution Prevention Act of 1965 (Act No. 45 of 1965)	APPA
Biodiversity Act of 2004 (Act No. 10 of 2004)	BDA
Conservation of Agricultural Resources Act of 1993 (Act No. 43 of 1983)	CARA
Contractor Environmental Officer	CEO
Construction Environmental Management Programme	EMPr
Department of Environmental Affairs	DEA
Department of Water and Sanitation	DWS
Environment Conservation Act of 1989 (Act NO. 73 of 1989)	ECA
Environmental Control Officer	ECO
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National Water Act of 1998 (Act No. 36 of 1998)	NWA
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Occupational Health and Safety Act of 1993 (Act No. 85 of 1993)	OHSA
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Protected Areas Amendment Act of 2004 (Act 31 of 2004)	PAAA
Skills Development Act of 1998 (Act No. 97 of 1998)	SDA
Transnet Construction Environmental Management Plan	CEMP
Transnet Standard Environmental Specification	SES
Water Services Act of 1997 (Act 108 of 1997)	WSA
World Heritage Convention Act of 1999 (Act No. 49 of 1999)	WHCA

1. INTRODUCTION

The construction of a substation can have a major impact on the environment. It is therefore imperative that precautions are taken to ensure that environmental degradation is minimized while the project is undertaken. This will take a concerted effort from the project team and proper planning is of the utmost importance.

Nsovo Environmental Consulting (hereafter referred to as Nsovo) has been appointed by Transnet SOC Limited (hereafter referred to as Transnet) to compile an Environmental Management Programme (EMPr) which will be a guideline for the mitigation and management measures to be implemented during the course of the project as well as during the operational phase. This draft EMPr is a living document that guides the day to day activities throughout the lifecycle of the project; it may from time to time, require revisions as may be dictated by the course of construction.

This draft EMPr has been compiled as part of the Basic Assessment Application in line with Section 24N of the National Environmental Management Act, 1998 (Act 107 of 1998) which imposes a duty of care and remediation of environmental damage.

The purpose of the EMPr is to give effect to precautionary measures, which are to be put in place for controlling the activities that take place on site. It has been developed to ensure compliance with National legislative and regulatory requirements.

1.1. PROJECT DESCRIPTION

The coal line currently delivers close to 70 million tonnes per annum (mtpa) of export coal from about 48 mine loading sites situated mainly in Mpumalanga Province to the Richards Bay Coal Terminal. Subsequently, the 81 mtpa rail expansion programme is designed to meet the increasing international market demand for export coal. Currently the coal line is composed of two electrification systems namely, the 3kV DC and 25kV DC from Blackhill to Ermelo and Ermelo to Richards bay respectively. Hundreds of wagon trains operate between these locations; therefore the program aims to increase rail capacity of the coal line and to address the bottleneck which impacts on the stable flow of train traffic.

Consequently, Transnet Freight Rail (TFR) has appointed Transnet Capital Projects (TCP) to provide a new substation and associated infrastructure. The proposed development will entail construction of a new Transnet 5MW 3kV DC Traction Substation wherein Eskom will provide 132kV AC which will be stepped down to 3kV DC. From the Eskom transmission line, a Transnet-owned 132kV power line/substation bay will run on Transnet property to a transformer where the step-down will take place. The aforementioned 132 kV infrastructure is the specific component of the proposed development requiring Environmental Authorisation. The proposed upgrade will strengthen the traction power supply to reduce thermal overloading.

The proposed development will be located on Farm Tweefontein 458 JS, Portion 4 in Rietkuil within the jurisdiction of Steve Tshwete Local Municipality in Mpumalanga Province, South Africa. The proposed development footprint is approximately 5600m^2.

The aforementioned development triggers listed activities under GNR 983 (Listing Notice 1) Activities 11(i), 12 (x) and 19(i) therefore, Environmental Authorisation must be obtained in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations of December 2014.

1.2. DESCRIPTION OF LOCALITY

The proposed new infrastructure will be located on Farm Tweefontein 458JS, Portion 4 in Rietkuil within the jurisdiction of Steve Tshwete Local Municipality in Mpumalanga Province, South Africa. Refer to the locality map below.

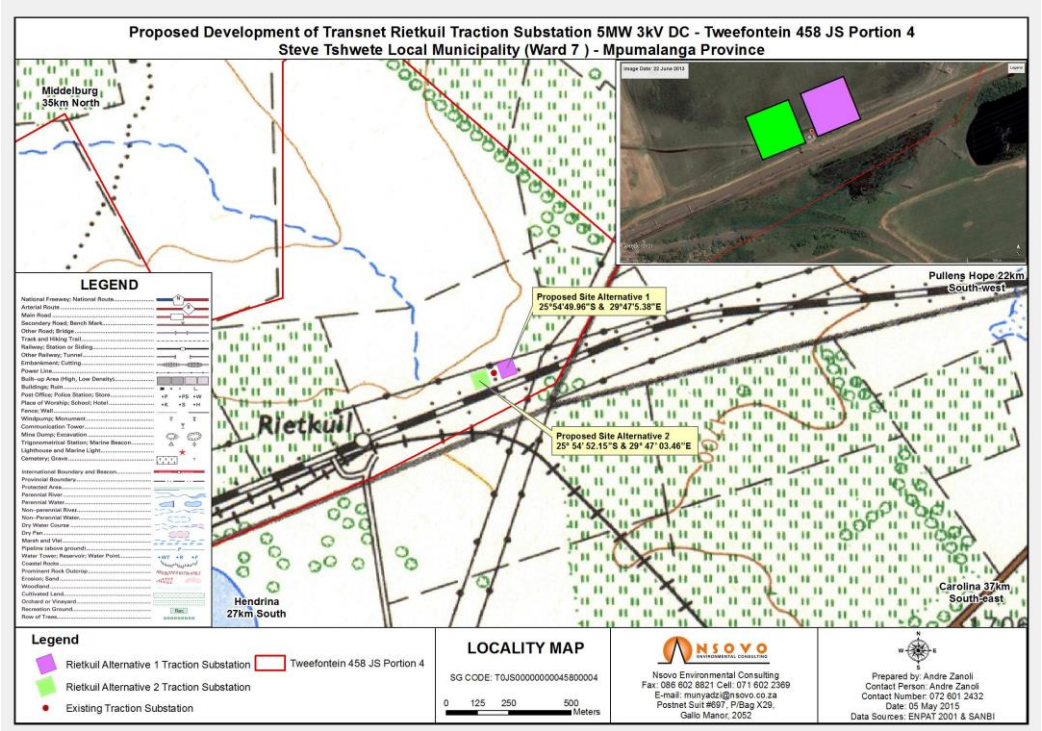

Figure 1: Locality Map for the proposed project.

2. PURPOSE AND SCOPE OF THE EMPR

The EMPr sets out general environmental specifications, which are applicable to the construction activities associated with the proposed project. This document serves as a guideline for the management of the site and provides specifications and regulations that must in all instances be adhered to. It is the responsibility of all parties, including Contractors and sub-contractors, involved in the project to commit themselves to the implementation of the EMPr in all phases of the project.

The objectives of the EMPr are to:

- Ensure that the activity is undertaken in compliance with national and provincial environmental legislations as well as local by-laws and policies.
- Ensure that Transnet's CEMP as well as the Standard Environmental Specification (SES) and other relevant policies are underwritten at all times;
- All Landowner special conditions are identified and taken into consideration as the proposed projects is located adjacent to other private properties;
- Ensure that all environmental conditions stipulated in the EA are implemented;
- Detail mitigation measures, time-frames and criteria for assessing the success or failure of each measure;
- Provide detailed monitoring programmes to ensure compliance;
- Provide input and strategies for environmental quality control and risk management;
- To preserve the natural environment by limiting destructive actions on site;
- Ensure appropriate restoration of areas affected by construction; and
- Prevent long term environmental degradation.

This draft EMPr is a blueprint that guides the day to day activities throughout the lifecycle of the project; it may from time to time require revisions, as may be dictated by the course of construction. It should be borne in mind that the EMPr is a working document that should be updated on a regular basis and moreover it's legally binding.

3. GENERAL ENVIRONMENTAL GUIDELINES FOR THE CONSTRUCTION PHASE

This EMPr has been compiled in fulfillment of the requirements of the National Environmental Management Act, 1998 (Act 107 of 1998). This document serves as a guideline for the management of the site by the Authorisation holder (Transnet), its Contractor and subcontractors, in order to minimise adverse environmental impacts and effects. Transnet will be responsible for ensuring compliance of the Contractor with the EMPr and will rely on the Environmental Control Officer (ECO) to monitor compliance. The Contractor must in turn monitor his employees to ensure compliance with the provisions of the EMPr.

The main Contractor shall receive a copy of the EMPr from the Transnet on which he / she will be afforded the opportunity to clear any misconceptions and uncertainties. The EMPr will form part of the contract between Transnet and the Contractor. In the event of discrepancy with regard to environmental matters or environmental specifications this document shall take precedence.

4. APPLICABLE LEGISLATION

This list is not intended as an exhaustive analysis of the applicable environmental legislations but provides a guideline to the relevant aspects of each Act.

Table 1: Legislation pertaining to the proposed project

Aspect	Relevant Legislation	Brief Description
Environment	National Environmental Management: Act 1998, (Act No. 107 of 1998)	The overarching principles of sound environmental responsibility are reflected in the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), The principles set out in the National Environmental Management Act, 1998 (Act No. 107 of 1998), hereafter referred to as NEMA, apply to all listed projects. Construction and operation have to be conducted in line with the generally accepted principles of sustainable development, integrating social, economic and environmental factors.
Biodiversity	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	The purpose of the Biodiversity Act is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed. The site is located within the Eastern Highveld Grassland which is considered a Threatened ecosystem (vulnerable). Further, it falls within a Class 5 (least concern) category according to the Terrestrial Biodiversity Areas.
Protected Areas	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)	The purpose of this Act is to provide for the protection, conservation and management of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes.
Heritage Resources	National Heritage Resources Act, 1999 (Act No. 25 of 1999)	The National Heritage Resources Act, 1999 (Act No. 25 of 1999) legislates the necessity for cultural and heritage impact assessment in areas earmarked for development, which exceed 0.5 ha. The Act makes provision for the potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA).

Aspect	Relevant Legislation	Brief Description
		No obvious signs of culturally or historically significant elements were identified on the proposed site.
Air quality management and control	Atmospheric Pollution Prevention Act, 1965 (Act 45 of 1965) (APPA) National Environmental Management: Air Quality Act, 2004(Act 39 of 2004)	The object of the Act is to protect the environment by providing reasonable measures for the protection and enhancement of the quality of air and to prevent pollution of air and ecological degradation. Part 6 of the Act makes provision for measures to control dust, noise and offensive odours. This provision must be read together with the statutory requirements as well as the National Environmental Management: Air Quality Act. The Proposed area has not been declared as a dust control area in terms of section 27 of the APPA. Section 32 of The National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) deals with dust control measures in respect of dust control. Whilst none are promulgated at present, it provides that the Minister or MEC may prescribe measures for the control of dust in specified places or areas, either in general or by specified machinery or in specified instances, the steps to be taken to prevent nuisance by dust or other measures aimed at the control of dust.
Noise Management and Control	Noise Control Regulations in terms of the Environmental Conservation, 1989 (Act 73 of 1989)	The assessment of impacts relating to noise pollution management and control, where appropriate, must form part of the EMPr. Applicable laws regarding noise management and control refer to the National Noise Control Regulations issued in terms of the Environment Conservation , 1989 (Act 73 of 1989). The inhibition of sites by contractors may generally increase the ambient noise levels in the area and this is expected to vary along the route. Additional noise may be expected from the increased heavy duty traffic as well as construction equipment.
Water	National Water Act, 1998	The National Water Act, 1998 (Act No. 36 of 1998) [NWA]

Aspect	Relevant Legislation	Brief Description
	(Act 36 of 1998)	provides for Constitutional water demands including pollution prevention, ecological and resource conservation and sustainable utilisation. In terms of this Act, all water resources are the property of the State and are regulated by the Department of Water and Sanitation (DWS). A large unchannelled valley bottom wetland is located on site with two dams located within the wetland. These dams are located south of the proposed site. The northern section of the wetland is linked to the Bosmanspruit. The Water Use Licence Application will be applied for with the Department of Water and Sanitation.
Agricultural Resources	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	The objective is to provide for control over the utilisation of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith. The proposed development is located within agricultural fields; therefore it will have an impact on agriculture notwithstanding that the farms are inactive.
Human	The Constitution of South Africa, 1996 (Act No. 108 of 1996	The Constitution of South Africa, 1996 (Act No. 108 of 1996) provides for an environmental right (contained in the Bill of Rights, Chapter 2). In terms of Section 7, the state is obliged to respect, promote and fulfill the rights in the Bill of Rights. The environmental right states that: "Everyone has the right - a) To an environment that is not harmful to their health or well-being; and b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that - -Prevent pollution and ecological degradation; -Promote conservation; and

Aspect	Relevant Legislation	Brief Description
		-Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

4.1 STANDARD TRANSNET POLICIES TO BE COMPLIED WITH

In addition to the approved EMPr, EA and other permits and licenses, the construction activities should also comply with the standard Transnet documents listed below. It is the responsibility of all parties involved in the implementation of the EA and EMPr to ensure that the most updated Transnet policies/documents are implemented. The Transnet documents to be implemented are:

- Transnet Construction Environmental Management Plan; and
- Transnet Standard Environmental Specifications.

5. SPECIFIC ROLES AND RESPONSIBILITIES

The roles of the responsible people on site are included below:

- **The Authorisation Holder i.e. Transnet** is the ultimate responsible party for the development and all aspects and phases of the project thereof. Transnet's representative must communicate all issues raised in this EMPr with all personnel undertaking any work on the site. Should any non-compliance with this EMPr take place, Transnet will ultimately be held liable. Transnet should include the EMPr as a specific condition within any contract that is to be signed between him/her and any other party involved in the construction of the proposed development.

- **The Contractor** is responsible for complying with the EMPr during the construction and rehabilitation phases of the development. The Contractor is responsible for ensuring that his/her employees and sub-contractors appointed by him/her are familiar with the EMPr and that they abide by it. The Contractor will be responsible for any non-compliance with the EMPr and will pay for any remedial work that may result from non-compliance resulting directly from his/her negligence. Furthermore, the Contractor will:
  - Provide all necessary supervision during the execution of the project. He/ She should be available on site all the time.
  - Appoint a competent CEO.
  - Implement the projects as per the approved project plan.
  - Ensure that implementation is conducted in an environmentally acceptable manner.
  - Fulfil all obligations as per the agreed contract.
  - Comply with special conditions as stipulated by Landowners during the negotiation process.

- 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.

- **The ECO** is responsible for communicating environmental issues associated with the site to the Contractor. Should any non-compliance with the EMPr take place, the ECO must communicate this with the party responsible for the non-compliance as well as the Contractor. If the non-compliance continues after written request by the ECO to rectify the situation, the ECO must inform the relevant authority in writing; in this case: the DEA. The ECO is responsible for the explanation of environmental issues contained in this EMPr to anyone working on the site. Should any issues arise on the site of an environmental nature or concern, the ECO will be responsible for taking the appropriate action. Any problems or areas of non-compliance with regard to the EMPr will be communicated immediately in writing, to the Contractor by the ECO.

- **Transnet Environmental Advisor** has to advise and audit during the construction phase and furthermore has to implement and integrate environmental management systems by ensuring compliance to requirements of the ISO 14000 & monitoring performance. Report environmental incidents, provides environmental training and ensure compliance to the legislation and other legally binding documents.

- **Transnet Construction Manager**. The Transnet Construction Manager will inform the landowners, timeously, of the construction programme, duration and all interference with their daily activities.

- **The national and or local/provincial environmental authority** i.e. DEA and or Mpumalanga Department of Agriculture, Rural Development and Land Reform is responsible for taking action against any non-compliance with the EMPr by the Client or any of his/her subcontractors through their enforcement unit. The local/provincial authority can request a compliance audit to be undertaken on the site at any time during the development phase of the project.

6. METHOD STATEMENTS FOR THE ACTIVITIES TO BE CARRIED OUT

The following Method Statements (MS) will be prepared and signed by Transnet, ECO and Contractor prior to commencement of activities on site. The MS will be submitted to the ECO two weeks in advance for review, comment and approval. Below are the MSs to be prepared:

- Site Establishment;
- Vegetation and flora managemen;
- Fauna management;
- Excavations for construction of substation;
- Chemical/hazardous substance storage;
- Cement/concrete use;
- Fire management;
- Emergency response;

- Storm water management and erosion control measures;
- Waste management;
- Access road(s);
- Effluent management;
- Staff accommodation;
- Ablution facilities;
- Eating areas;
- Soil management;
- Temporary site closure; and
- Rehabilitation of site.
- Environmental awareness training

This list has not exhausted all the activities/aspects that may require MS prior to commencement of the work. The ECO may require more MSs to be submitted as the project progresses.

7. DESCRIPTION OF MITIGATION MEASURES

This section of the EMPr serves to prescribe mitigation measures to prevent, reduce, limit, eliminate or compensate for impacts, to acceptable/insignificant levels. In setting mitigation measures, the practical implications of executing these measures must be borne in mind. With early planning, both the cost and the impacts can be minimised. The stipulations of this report should be conveyed to Contractors prior to the commencement of construction.

8. PRE- CONSTRUCTION MANAGEMENT PROGRAMME

The pre-construction management plan is to be used as a guide during the planning, design and detailing of the development components. This part of the plan is to be referenced by all involved in decision making during the planning and design phases.

8.1 NEGOTIATIONS WITH AFFECTED LANDOWNERS

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• To ensure that landowners are aware of activities taking place within their properties.	• Transnet will ensure that all affected landowners are negotiated with prior to construction.	• Signed landowner consent forms.	• Transnet.	• Prior commencement of construction activities.

8.2 COMMISSIONING OF TENDER

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Ensure that proper environmental standards are established prior to commencing with construction by informing all parties of appropriate environmental protection measures.	• The successful tendering Contractors will be made aware of the contents of this EMPr and any penalties arising from noncompliance prior to the commencement of work. • All tendering Contractors will be made aware of the audit and monitoring requirements as stipulated in this EMPr. • Appoint an ECO who will be responsible to monitor compliance to the EMPr.	• Signed Declaration by Contractor. • Appointment Letter.	• Transnet. • Contractor.	• Prior commencement of construction activities.

8.3 SITE ESTABLISHMENT

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• To ensure minimal disturbance of the environment during the site establishment.	Construction camps on the site will be required to be established in appropriate locations prior to the commencement of construction, preferably within already disturbed areas. After completion of the contract, these areas have to be rehabilitated. **Site Plan:** Documentation for each proposed camp site should be prepared by the contractor prior to the commencement of construction activities, and should be submitted to Transnet for approval. This documentation should include, but should not be limited to the following: • Site access (including entry and exit points). • All material and equipment storage areas (including storage areas for hazardous substances such as fuel and chemicals). • Construction offices and other structures. • Security requirements (including temporary and permanent fencing, and lighting) • Solid waste collection facilities and waste treatment facilities for litter, kitchen refuse, sewage and workshop-derived effluents. • Storm water control measures. • Provision of potable water and temporary ablution facilities. • Only designated areas may be used for the storage of materials, machinery, equipment and site offices. The site offices should not be in close proximity to steep areas, as this will increase soil erosion. Offices (and in particular the ablution facilities, spoil areas and hazardous material stockpiles) must be located as far	• Observation • Site Plan • Landowner agreements	ECO & Contractor CEO	Prior to site establishment.

	away as possible from any watercourse. • Throughout the period of construction, the contractor shall restrict all activities to within the designated areas as per the construction layout plan. Any relaxation or modification of the construction layout plan is to be approved by the ECO. **Site Camps**: The following restrictions or constraints shall be placed on the site camp, and construction staff in general: • The use of rivers and streams for washing of clothes. • The use of welding equipment, oxy-acetylene torches and other bare flames where veld fires constitute a hazard. • Indiscriminate disposal of rubbish or construction wastes or rubble littering of the site. • Spillage of potential pollutants, such as petroleum products. • Collection of firewood. • Poaching of any form. • Use of surrounding veld as toilets. • Burning of wastes and cleared vegetation. **Vegetation clearing:** • The natural vegetation encountered on the site is to be conserved and left intact as much as possible. • Only trees and shrubs directly affected by the works, and such others as may be approved by the ECO in writing, may be felled or cleared. **Water for human consumption:** • Water for human consumption should be available at the site offices and at other convenient locations on site.			

	The water must be obtained from an approved source as per the SES. **Sewage Treatment:** • Should there be no other ablution facilities available, chemical toilets must be supplied (1 per 10 persons) and must be regularly cleaned and maintained by the contractor. The positioning of the chemical toilets is to be done in consultation with the ECO and there must be secured to the ground to prevent them toppling due to wind. • Applicant must ensure that no sanitary system is located within a horizontal distance of 100m from any water course. • The Contractor should arrange for regular emptying of toilets and will further be entirely responsible for enforcing their use. The Contractor will ensure that the latrines are well maintained and clean. • If necessary, the ablution facilities must be screened from the public view. In remote areas where chemical toilets may not be a viable option, agreement must be reached on alternatives before construction starts. • The ablution facilities must be located 100m or more from the wetland area and its buffers.			

8.4 SENSITIVE ECOLOGY

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• To ensure that the sensitive area is not disturbed. • To ensure minimal or if all possible no disturbance to the vegetation on and	• Relocate, demarcate or recommend conservation / preservation measures for any identified ecologically "sensitive" and/or protected species and areas. • Point out and/or demarcate all ecologically "sensitive" areas to the Contractors (e.g. red data habitats & species,	• Observation • ECO to monitor • Site plan	Transnet	Prior to construction.

around the site. • To ensure the control of alien invasive species and to ensure that the rehabilitation of indigenous vegetation is as close to the original state as possible.	rivers, streams, wetlands, sensitive soils, steep slopes and areas susceptible to erosion). • Ensure that 'No-Go' areas are clearly demarcated and/or fenced before construction starts. Barriers are to be maintained in good order throughout the course of the construction.			

8.5 ROADS

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• To ensure minimal and or no additional disturbance of the environment as primary access roads already exist.	An access route to the site already exists and therefore there may be no need for new road construction. The client must point out the access road to be used. The Contractor must make use of existing routes as far as practically possible. • Access roads will be maintained by the Contractor. The Contractor will erect and maintain marker pegs along the boundaries of the working areas, access roads, haul roads or paths, to the satisfaction of the Construction Manager, before commencing any other work. If proved insufficient for control, these will be replaced by fencing, with the additional cost being borne by the Contractor. Ensure that access roads to the site are of a suitable quality to eliminate soil erosion, and channel storm water into grass buffer area. • All existing farm roads (private roads) damaged during the construction phase, should at the end of construction be repaired to the satisfaction of the landowner, as per the conditions of the written contractual agreement between the landowner and Transnet. Transnet must communicate the conditions of the agreement with the Contractor to ensure compliance during construction	Observation	• Contractor • Project Manager	• Prior-construction

	activities. • Damage to the existing access roads as a result of construction activities (during construction), will be repaired to the satisfaction of the Project Manager. The cost of the repairs will be borne by the Contractor.			

8.6 MATERIALS HANDLING, USE AND STORAGE

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• To ensure safe handling, storage use and disposal of hazardous substances. • To ensure full compliance with the requirements of the applicable legislation.	The Contractor's management and maintenance of plant and machinery will be strictly monitored according to the criteria given below. **Safety:** • All the necessary handling and safety equipment required for the safe use of petrochemicals and oils shall be provided by the Contractor to be used and/or worn by the staff. Contractor must comply with the Occupational Health and Safety Act, 1993 (Act 85 of 1993) and Construction Regulations, 2003 as this governs what the contractor has to do/provide for his staff. **Hazardous Material Storage:** • Petrochemicals, oils and identified hazardous substances shall only be stored under controlled conditions. • All hazardous materials will be stored in a secured, designated area that is fenced and has restricted entry. Storage of hazardous products shall only take place using suitable containers approved by the ECO. In addition, hazard signs indicating the nature of the stored materials shall be displayed on the	• Observation • Incident Report	ECO & Contractor CEO	Continuous throughout the construction phase.

	storage facility or containment structure. **Fuels and Gas Storage:** • Fuel should be stored in a secure area in a steel tank supplied and maintained by the Contractor according to safety procedures. • Gas welding cylinders and LPG cylinders should be stored in a secure, well-ventilated area. The Contractor must supply sufficient fire fighting equipment in event of an accident and strictly no smoking will be allowed where fuel is stored and used.			

8.7 EMPR TRAINING

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• To ensure that all site personnel have basic level environmental awareness training. Topics covered should include, but not limited to: • What is meant by environment • Why the environment need to be conserved • How construction can impact on the environment • What can be done to mitigate against impact • Awareness of	• The CEO shall arrange for Environmental Awareness Training programs for the personnel on site and the construction team with the contents of this EMPr, either in written format or verbally.	• Signed training attendance Register. • Declaration of good conduct signed by all site personnel.	CEO & Contractor	• Prior construction and to continue throughout construction through toolbox talks.

emergency and spill response • Social responsibility				

8.8 WATER SUPPLY

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• To ensure availability of water for various uses as and when required. • To ensure that water usage is minimized • To conserve water resources at all times	• The source of water will be the current supply to the existing substation. • The Contractor shall only make use of approved sources to obtain water and this will be inspected by the ECO on a quarterly basis.	Observation	ECO & Contractor	Ongoing during the construction phase

9. CONSTRUCTION MANAGEMENT PLAN

The Construction Management Plan forms part of the contract documentation.

9.1 VEHICULAR ACCESS AND MOVEMENT OF CONSTRUCTION VEHICLES

Possible Impact	Objective	Applicable Legislation /Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Damage to protected /endangered vegetation and crops	• To prevent ecological damage. • Minimise erosion of	• CARA • BDA	• All access roads will be marked. • Agree on access to be used throughout the construction phase. • No illegal use of private roads during construction due to damage anticipated	• Access plan approved by ECO • All access roads will be	• Observation Site plan • Regular monitoring of access roads	ECO & Contractor CEO	Continuous during the construction phase.

• Damage to sensitive areas • Erosion and loss of topsoil	embankments and subsequent siltation of rivers, streams and dams		as a result of heavy vehicles and equipment. • All existing private access roads used for construction purposes, shall be maintained at all times to ensure that the local people have free access to and from their properties. • Speed limits shall be enforced in such areas and all drivers shall be sensitised to this effect. • Upon completion of the project all roads shall be repaired to their original state. • No roads shall be cut through river- and stream banks as this may lead to erosion causing siltation of streams and downstream dams. • No equipment shall be used which may cause irreparable damage to wet areas. The contractor shall use alternative methods of construction in such areas. • During construction, use should be made of existing access routes to construction areas where possible. • Construct approved vehicle turning areas, avoiding selected ecological sensitive areas or species, and have turning area routes approved by the ECO. Temporary access roads must be rehabilitated after use. • Soil stabilisation measures to be implemented on steep slopes. • Rehabilitation of disturbed areas immediately following road construction.	marked • No complaints from residents and landowners • No visible erosion scars on embankments once construction is completed • Road stabilisation is evident for the duration of the use thereof. • Erosion is not evident on slopes.	conditions • Monitoring of impacts into the surrounding areas.		

9.2 MOVEMENT OF CONSTRUCTION PERSONNEL AND EQUIPMENT

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Impact on sensitive environments. • Trespassing • Safety and security	• To ensure controlled and manageable movement of personnel and equipment.		• The Contractor must ensure that all construction personnel, labourers and equipment remain within the demarcated construction sites at all times. • Ensure that access to the site, including related infrastructure and machinery is restricted to authorised personnel only. • Where construction personnel and/or equipment wish to move outside the boundaries of the site, the Contractor/ labourers must obtain permission from the CEO. • All equipment moved onto site or off site during a project is subject to compliance with the legal requirements. Oil filled equipment such as Transformer, CT's, VT's and capacitor cans have specific safety requirements regarding their handling, transport and storage. The Contractor shall meet these safety requirements under all circumstances. • All equipment transported shall be clearly labelled as to their potential hazards according to specifications. • All the required safety labelling on the containers and trucks used shall be in place. • The Contractor shall ensure that all the	• No trespassing of contractor's workforce. • No complaints from landowners	• Observation • Security registers. • Complaints register	ECO & Contractor	Continuous throughout the construction phase.

			necessary precautions against damage to the environment and injury to persons are taken in the event of an accident and shall supply a method statement to that effect. • The Contractor is to ensure that no machinery, personnel, material, or equipment enters 'No-Go' areas at all times during the course of the project				

9.3 VEGETATION

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Damage to protected/endangered vegetation • Damage to topsoil	• To conserve flora. • To ensure the control of alien invasive species and to ensure that rehabilitation is as close as possible to the original state	• NEMA • CARA • LRA • SDA	• Although no protected species were identified on site during the site assessment; any protected species which cannot be avoided should be trans-located to safe sites nearby. • Existing tracks should be used for access wherever possible. • Only vegetation directly affected by the works may be felled or cleared. • Demarcate the construction footprint. • A temporary fence or demarcation must be erected around the construction area (include the servitude, construction camps, areas where material is stored and the actual footprint of the development) to prevent access to sensitive environs.	• No alien species • No disturbance of protected flora • Minimal disturbance of vegetation including crops.	• Observation • Complaints register	• ECO & • Contractor • CEO	On-going during the construction phase.

			• No open fires are permitted within naturally vegetated areas. • Formalise access roads and make use of existing roads and tracks where feasible, rather than creating new routes through naturally vegetated areas. • Construction workers may not remove flora and neither may anyone collect seed from the plants without permission from the local authority. • Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction /earthworks in that area. • Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. • Implement an alien invasive plant monitoring and management plan whereby the spread of alien and invasive plant species into the areas disturbed by construction are regularly removed and re-infestation monitored.				

9.4 PROTECTION OF FAUNA AND AVIFAUNA

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency

• Damage to habitat • Negative impact on animal life	• To conserve animal life. • To make sure that impact on natural vegetation is kept to the very minimum in order to conserve suitable habitats as much as possible. • To prevent degradation of suitable sensitive fauna habitats. • To prevent contamination of water within the nearby watercourse thereby preserving several amphibian species.	• APA • BDA • SES	• Any active faunal burrows within the development footprint should be located and marked before construction and avoided until the occupant animals can be excluded or have moved away due to the nearby construction activities. • Any fauna threatened by construction activities should be removed to safety. • During construction all vehicles should adhere to demarcated tracks or roads and the speed limit should not exceed 30km/h. • Where necessary, dust suppression should be done to reduce dust impacts on surrounding areas. • All construction staff should undergo environmental induction before construction commences in order to raise awareness and reduce potential faunal impacts. • All spills of hazardous material should be cleared in the appropriate manner according to the nature and identity of the spill and all contaminated soil removed from the site. • Under no circumstances shall any animals (livestock or game) be	• No reported faunal injuries • No complaints from landowners	• Observation • Complaints register that records complaints from landowners • Daily inspection	• ECO & • Contractor • CEO	On-going during the construction phase.

	• To ensure that impact on sensitive fauna species area kept to a minimum • To prevent injury or death of fauna species as a result of falling into open excavations.		handled, removed, killed or be interfered with by the Contractor, his employees, his subcontractors or his subcontractors' employees. • No hunting of fauna and avifauna shall be tolerated by the Contractor or his personnel on the Site or elsewhere. • The Contractor and his employees shall not bring any domesticated animals onto the site. • The Contractor shall keep the site clean and tidy from rubbish that can attract animals. • Vegetation clearing must be restricted to the construction footprint only. • Fauna rescue and relocation programme should be implemented. • Any open excavations must be inspected early in the morning prior to the daily construction activities. Any amphibians and small mammals or any other fauna species found should be removed and released in suitable habitats away from construction activities. The open excavations should be back-filled as soon as possible • Records of any injured or deaths				

			of sensitive species within the construction site must be kept by the ECO. • Areas identified with high ecological sensitivity should be avoided during construction activities. • As much of the natural vegetation as possible should be left intact in order to maintain ecological corridors for the movement of fauna species. • Disturbed area should be re-vegetated as soon as possible using an appropriate plan which incorporates indigenous plant species. • Roads should be planned to encourage faunal dispersal and minimize fragmentation of ecologically sensitive areas. Roads should preferably be maintained as gravel tracks. • Construction should be restricted to daylight hours to prevent any disturbance such as floodlights. • Personnel should be informed of the Animal Protection Act no. 71 of 1962 and encouraged not to harm any wildlife. • Pesticides that are				

			environmentally friendly should be used if necessary. • Vehicles must be regularly checked for oil or hydraulic leaks during the construction phase to prevent pollutants from entering surface and ground water.				

9.5 HERITAGE AND/OR ARCHAEOLOGICAL SITES

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Destruction of sites of archaeological and heritage significance. • Loss of historic cultural landscape. • Loss of intangible heritage value due to change in land use.	• To preserve any heritage, cultural or archaeological sites that might be encountered during the construction phase. • Protection of known sites against destruction, vandalism and theft. • Preservation and appropriate management of any new	• NHRA • WHCA • SES	• No obvious cultural or historical material were identified on site, however, should any graves or heritage artefacts be discovered during construction phase, all works must stop at the affected area and the ECO must be contacted. The ECO will contact SAHRA and all necessary procedures will be followed. • All identified archaeological material shall be barricaded and marked as no go for the duration of the construction phase. • Labour-intensive workers should be notified about these graveyards and the developer should avoid conveying duty during the time	• Any finds are immediately reported to a suitably qualified archaeologist for further investigation. • No destruction of or damage to known archaeological sites • Management of existing sites and new	• Intermittent observation.	• ECO & • Contractor • CEO • Archaeologist	On-going during all excavations

	archaeological sites should this be discovered during construction.		when the graveyards are active (that's mostly Saturday mornings). • If any archaeological material (e.g. fossils, bones, artefacts etc.) is found during excavation, the Contractor shall stop work immediately and inform the ECO and Transnet. • The ECO shall inform South African Heritage Resources Agency (SAHRA) and arrange for a registered heritage specialist to inspect, and if necessary excavate the material, subject to acquiring the necessary approval from SAHRA. • The Contractor shall not recommence working in that area until written permission has been received from the SAHRA. • Under no circumstances may any heritage material be destroyed or removed from site until the necessary approval has been obtained from SAHRA. Should any remains be found on site (potential human remain) the South African Police Services should be contacted. • An information section on cultural resources must be included in the environmental training given to	discoveries in accordance with the recommendations of the Archaeologists • No litigation due to destruction of sites			

			Contractors involved in earthmoving and trenching activities. This section must include basic information on: • Heritage; • Graves; • Paleontology; • Archaeological finds; and • Historical Structures.				

9.6 ACCESS ROADS

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Damage to heritage sites. • Disturbance of topsoil and vegetation • Impact on habitats and sensitive ecology • Possible erosion	• To ensure minimal disturbance of vegetation and protection of soils.	• BDA	• Access road to site already exists. The primary access to the site will be the National Route N11 and direct access will be though the Transnet Railway line service road which is a gravel track. • Construction staff may only use authorised paths and roads. The proclaimed speed limit must be strictly adhered to. • If two-way traffic movement is to take place, passing bays are to be used to prevent access / detours into the surrounding areas. The drivers delivering construction materials to site are to be made aware of this. • Upon completion of the construction, the Contractor will ensure that the access roads are returned to a state no worse than prior to construction	• Use of designated access roads • No complaints from the landowners • No destruction of or • damage to known • archaeological sites	• Observation • Site Plan • Complaints register	• Contractor • ECO • CEO	On-going during the construction phase

			commencing.				

9.7 SERVICING AND RE-FUELLING OF CONSTRUCTION EQUIPMENT

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Impact on soil and water resources due to accidental spillages.	• To conserve soils, surface and ground water. • To prevent spillages of hazardous substances	• NEMWA • NWA • OHSA • SES	• All maintenance and repair work will be carried out within an area designated for this purpose, equipped with necessary pollution containment measures. • The ground under the servicing and refuelling areas must be protected against pollution caused by spills and / or tank overfills (bunded / lined). • The Contractor may only change oil or lubricant at agreed and designated locations, except during emergency repair, following which any accidental spillages will be cleaned up / removed immediately. • In such instances the Contractor will ensure that drip trays are available to collect any oil or pollutants. • Drip trays must be placed under vehicles and machinery that are	• No evidence of hazardous substances polluting the site.	• Observation • On-going • monitoring • with regular • inspections	• ECO & • Contracto r • CEO	On-going during the construction phase

			stationary. • Construction vehicles are to be maintained in an acceptable state of repair. No vehicles or equipment with leaks or causing spills will be permitted to operate at any of the construction sites. • All leaking equipment must be repaired immediately or must be removed from site. • Fuels required during construction must be stored in a central depot at the construction camp. • This storage area should be located on a slab and be contained within a bund capable of containing at least 110% of the total volume in the containers. • Temporary fuel storage tanks and transfer areas also need to be located on an adequately bunded surface to contain accidental spillages. • Appropriate run-off containment measures must be put in place.				

9.8 WASTE MANAGEMENT

Possible Impact	Objective	Applicable Legislation/	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency

		Policy					
• Visual Impact • Water resources	• To ensure the efficient management of waste on site • To ensure minimal impact on the surrounding environment • . Minimise waste material being strewn in the environment	• NEMWA • SES	**SOLID WASTE MANAGEMENT** • An adequate number of 'scavenger proof refuse bins with lids must be provided at the construction site. • The Contractor will ensure that all personnel deposit waste in the waste bins provided. • All waste must be transported in an appropriate manner (e.g. plastic rubbish bags) and disposed of at a registered waste disposal site. Proof of safe disposal must be kept on site. • The Contactor may not dispose of any waste and / or construction debris by burning, or burying. • Waste bins must be emptied regularly (minimum weekly) such that they do not overfill. • Discard all construction waste at a registered waste management facility / landfill site, particularly waste or products that could impact on surface or groundwater quality by leaching into or coming into contact with water. • The Contactor may not get rid of any waste and / or construction debris by burning, or burying. • Discard all construction waste at a registered waste management facility / landfill site, particularly waste or products that could	• Presence of proper storage facilities that are properly labelled. • Post-construction work areas are clear of all waste materials.	• Intermittent Observation • Waste Disposal Records	• ECO & • Contract or • CEO	Daily

			impact on surface or groundwater quality by leaching into or coming into contact with water. • The Contractor will maintain 'good housekeeping' practices and ensure that all work sites and construction camp are kept tidy and litter free. **LIQUID WASTE MANAGEMENT** • An adequate number of drums must be provided at the construction site. • These drums must have lids and an external closing mechanism to prevent their contents from rain. • The Contractor will ensure that all personnel deposit liquid waste in the drums provided. • All waste must be transported in an appropriate manner and disposed of at a registered waste disposal site. • The Contractor will maintain 'good housekeeping' practices and ensure that all work sites and construction camp are kept tidy and litter free.				

9.9 SURFACE AND GROUNDWATER MANAGEMENT

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Possible contamination of water resources.	• To conserve all natural water resources • To ensure effective water management in order to prevent incorrect diversions of water which result in soil erosion and storm water run-off with negative environmental impacts. • To ensure that the rivers and streams are protected and incur minimal	• NWA • SES	• Water use related activities must be approved by DWS prior to commencement. • No unauthorised activities should occur within a 100m or within the 1:100 year flood line. • The Contractor must take reasonable precautions to prevent the pollution of the ground and water resources on and adjacent to the site as a result of his activities. • All the requirements stipulated in the National Water Act, 1998 (Act 36 of 1998) must be adhered to. • No surface, ground water or storm water may be polluted as a result of any activities on the site. • Erosion control measures must be implemented to reduce erosion and sedimentation. • No natural watercourse is to be used for the cleaning of tools or any other apparatus and bathing or washing of clothes.All washing operations will take place off-site at a location where wastewater can be disposed of in an acceptable manner. • No spills may be hosed down into a	• No water wastage of water.	• Observation • Design Plans	• Contractor • ECO • CEO	Continuous through the construction phase.

	negative impact from the development.		storm water drain, sewer, or into the surrounding natural environment. • All soil contaminated, for example by leaking machines, refuelling spills etc. is to be excavated to the depth of contaminant penetration, placed in suitable drums/containers and removed to a hazardous waste facility. • The Contractor shall not extract water from any natural resources without the relevant authorisation. • Contractor will comply with the storm water management measures. • The Contractor will be responsible for controlling erosion on temporary access roads. • The Contractor will not cause any physical damage to any aspect of a watercourse. • The Contractor will minimise the extent of any damage to flood plains that is necessary to complete the works, and will not pollute any river as a result of construction.				

9.10 SENSITIVE AREAS (WETLANDS AND BUFFERS)

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency

• Changing the physical structure within a water resource (habitat)	• To preserve and conserve the sensitive environs.	NWA	• Sediment barriers must be properly maintained throughout construction and reinstalled as necessary until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. • A temporary fence or demarcation must be erected around the works area to prevent access to sensitive environments. The works areas generally include the construction camp(s) and areas where material is stored. • Management of point discharges; • Planning of construction site must include eventual rehabilitation/restoration of indigenous vegetation cover; • Cordon-off areas that are under rehabilitation as no-go areas using appropriate measures. If necessary, these areas should be dropped off to prevent vehicular, pedestrian and livestock access; • Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover; • During the construction phase measures must be put in place to control the flow of excess water so that it does not	• Undisturbed sensitive environs and/or properly rehabilitated. • Compliance with the WUL conditions	• Observation • WUL	• CEO • ECO • Contractor	Throughout the construction and post construction to ensure proper rehabilitation.

			impact on the surface vegetation; • Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas; • Runoff from roads must be managed to avoid erosion and pollution problems; • Implementation of best management practices; • Source directed controls; • Active rehabilitation and monitoring of erosion where required; and monitor vegetation; • After construction, the land must be cleared of waste, surplus materials, and equipment, and all parts of the land shall be left in a condition as close as possible to that prior to use; • Ensure that maintenance does not take place haphazardly, but, according to a fixed plan from one area to another; • Weed control in buffer. • If wetland streams and drainage lines are to be destructed the applicant must ensure that mitigation measures are taken or alternatives provided.				

9.11 HAZARDOUS MATERIALS

Possible	Objective	Applicable	Mitigation / Management Action	Performance	Monitoring	Responsible	Monitoring

Impact		Legislation/Policy		Indicator	Criteria	Agent	Frequency
• Impact on soils and water resources	• To ensure safe and proper handling of hazardous material	• HSA • SES	• The Contractor must comply with all national, regional and local legislation with regard to the storage, transport, use and disposal of petroleum, chemical, harmful and hazardous substances and materials. • The Contractor will furthermore be responsible for the training and education of all personnel on site who will be handling the material about its proper use, handling and disposal. • The Contractor will be responsible for establishing an emergency procedure for dealing with spills or toxic substances. • Storage of all hazardous material is to be safe, tamper proof and under strict control. • Petroleum, chemical, harmful and hazardous waste throughout the site must be stored in appropriate, well maintained containers. • Exercise extreme care with the handling of diesel and other toxic solvents to ensure that spillage is minimised. • Any accidental chemical / fuel spills have to be corrected immediately.	• No incidents reported	• Hazardous material data sheet • Incident reports • Observation of spillages and leakages	• ECO & • Contractor • CEO	Continuous throughout the construction phase

9.12 OIL SPILL MANAGEMENT

Possible	Objective	Applicable	Mitigation / Management Action	Performance	Monitoring	Responsible	Monitoring

Impact		Legislation/ Policy		Indicator	Criteria	Agent	Frequency
• Impact on soils and water resources	• To avoid ground and surface water contamination • To ensure proper and safe handling of oil spillages.	• HSA • BDA • SES	• The Contractor must prevent potential oil spills during the replacement of underrated equipment, installation of current transformers and installation of the transformer. • Fuels, oils, hydraulic fluids, cement etc. must be stored in properly contained areas so as to minimize accidental spillage. • No hazardous or toxic chemicals or substances should be stored where there could be accidental leakage into subterranean water supplies. • Accommodation must be made for oil leaks that may occur from vehicle sumps. This can be achieved by providing a sump tray for each vehicle or sand that is later removed from site. The contaminated sand will have to be disposed of at a licensed hazardous disposal site. • All significant spills must be reported to the ECO within 24 hours. • The Contractor should be in possession of a mobile oil spill kit at all times. • The oil spill clean-up and rehabilitation standard need to be implemented.	• No incident reported • Proper use of drip trays • Presence of oil spill kit	• Observation • Incident report	• ECO • Contractor • CEO	On-going during the construction phase.

9.13 STORM WATER MANAGEMENT

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Possible negative impact on water resources	• To reduce the potential impact from runoff on sensitive areas.	• NWA • SES	• The Contractor must ensure that rainwater containing pollutants does not run-off into natural areas and thus result in a pollution threat. • Storm water management plan must be implemented. • The client must ensure that the drainage diversion system is fully operational to divert runoff from areas of potential pollution, e.g. batching area, vehicle maintenance area, workshops, chemical and fuel stores, etc. • Storm water shall be diverted from the construction works. Where necessary, works must be constructed to attenuate the velocity of the storm water discharge. • Increased runoff due to vegetation clearance and/or soil compaction must be managed and steps must be taken to ensure that storm water does not lead to excessive levels of silt entering the watercourses; • Necessary erosion mechanisms shall be employed to ensure the sustainability of all the structures; • Effort shall be made to ensure that	• No evidence of erosion • No evidence of increased siltation	• Site Plan • Observation	• ECO • Contractor • CEO	Continuous during the construction

			storm water leaving the construction site is not contaminated by any substance, whether solid, liquid or gas. • Storm water management systems must be constructed, operated and maintained in a suitable manner throughout the project.				

9.14 FIRE

Possible Impact	Objective	Applicable Legislation /Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Destruction of property • Loss of life	• To prevent open fires. • To ensure that the workforce is aware of emergency procedures should an incident occur.	• NEMA • NVFFA • SES	• A fire Management Plan and Fire Protection plan should be put in place by the Contractor and Transnet. Landowners must be consulted in order to incorporate their specific firefighting measures. • The Contractor must take all the necessary precautions to ensure that fires are not started as a result of activities on site. • Fuels or chemicals must be stored in a secured designated storage area. • Gas and liquid fuels may not be stored in the same storage area. • All fire control mechanisms (firefighting equipment) will be routinely inspected by a qualified investigator for efficacy and be approved by local fire services. Such mechanisms will be present and accessible at all times. The Contractor must ensure that there is adequate fire-	• No reported fir incidents • No loss of life • No traces of cigarettes buts outside the designated smoking area.	• Fire Management Plan • Daily checks	• ECO • Contractor • CEO	On-going during the construction phase

			fighting equipment at the fuel stores in case of emergency. • No open fires for heating or cooking will be permitted on site, unless otherwise agreed and then only on designated areas. • All staff on site will be made aware of general fire prevention and control methods and the name of the responsible person to alert to the presence of a fire. • Designated smoking areas should be provided, with special bins for discarding of cigarette stump. • The Contractor will advise the relevant authority of a fire outside of a demarcated area as soon as it starts and will not wait until he can no longer control it. • The Contractor will be responsible to compensate the landowner for damages caused by a fire as a result of the Contractor's working activities.				

9.15 AIR POLLUTION

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Dust nuisance from excavations, vegetation	• To ensure proper mitigation of air pollution	• NEMA • APPA • ECA • SES	The potential air pollutants would be dust emanating from excavation activities and access roads as well as from emissions from vehicle/ equipment exhausts. In the event that excessive dust arises from any construction activities:	• No complaints from surrounding land owners recorded.	• Observation • Complaints register	• ECO • Contractor • CEO	On-going throughout the construction phase

clearing and dirt roads.	• To avoid dust nuisance from excavation activities and vehicles on dirt roads		• Appropriate dust suppression measures or temporary stabilising mechanisms will be used when dust generation is unavoidable (e.g. dampening with water, chemical soil binders, straw, brush packs chipping), particularly during prolonged periods of dry weather. • Removal of vegetation will be avoided until such time as soil stripping is required. • No burning of waste material, such as vegetation from any clearing operations is allowed; • Drive at authorised speed on the access road in order to minimise or avoid dust pollution. • Excavation, handling and transport of erodible materials will be avoided under high wind conditions or when a visible dust plume is present. If dust-damping measures are deemed inadequate, work will cease until wind speeds drop to an acceptable level. • Soil stockpiles will be located in sheltered areas to limit the erosive effects of the wind. • Equipment and construction vehicles must be in good working order.				

9.16 NOISE

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency

• Noise during drilling of foundations and associated activities	• To ensure minimal noise disturbances. • To ensure proper mitigation of noise. • To avoid noise nuisance from operating construction equipment	• NEMA • SES	• Machinery and vehicles are to be maintained in good working order. • Offending machinery and vehicles will be banned from use on site until they have been repaired. • Noise levels must be kept within acceptable limits and must not be of such nature as to detract adjacent land users. • Noise generating activities with output levels of 85dB or more must be scheduled between 7h00 – 17h00 Mondays to Fridays and weekends as required and with the permission of the ECO and consent from landowner. • Any complaints pertaining to noise must be recorded and reported to the ECO and addressed accordingly. • Labourers to be provided with hearing protection as and when required.	• No complaints from surrounding land owners recorded.	• Listening • A register of complaints to be kept on site at all times and kept up to date.	• Contractor • ECO • CEO	On-going during the construction phase

9.17VISUAL

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Loss of sense of place.	• To ensure proper mitigation of potential visual	• NEMA	• Storage facilities, feeder bay, transformers and other temporary structures on site should be located such that they have as little visual impact on local residents as possible. • Soil excavated (if any) must not be	• Clean and tidy site. • No complaints from the landowners	• Observation • Complaints register	ECO & Contractor CEO	On-going during the construction phase.

	impacts. • To maintain the site's aesthetics .		stockpiled above 2m. • All temporary structures erected on site for the purposes of the project's construction phase will be removed from site upon completion of the project. • Lighting will be sufficient to ensure security but will not constitute 'light pollution' to the surrounding areas. • The site must be clean and tidy at all times.	and affected parties.			

9.18 EXCAVATION, BACKFILLING AND TRENCHING

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Possible erosion • Injury of animal life	• To prevent erosion. • To ensure safety for both human and animals.	• OHSA • APA	While working at areas prone to erosion the following must be adhered to: • Excavations must not be left open for longer than 30 days where at all possible • Excavations must be barricaded/ fenced off at all times.	• No incidence of animals trapped in trenches reported	• Observation • Incident report	• Contractor / • ECO • CEO	On-going excavations

9.19 AGRICULTURAL ACTIVITIES

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Negative	• To limit	CARA	• Maintain good relations with	• No	• Observation	• ECO	During and

impacts on agricultural activities as a result of maintenance procedures, servitude clearing e	the impact on agricultural activities		landowners. • Avoid unnecessary destruction of crops by remaining within the servitude at all times • No form of disturbance of agricultural stock will be permitted for whatever reason, except for all approved activities.	encroachment into agricultural crops • No negative feedback from landowners	• Complaints register	• CEO • Construction Manager • Contractor	after maintenance procedures

9.20 EROSION AND CONTROL

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Impact on soils, habitats and sensitive environments.	• To prevent erosion and sedimentation.	• NWA • ECA • SES	To prevent any form of erosion the following must be adhered to: • During construction, the Contractor will protect areas susceptible to erosion by installing necessary temporary and / or permanent drainage works as soon as possible and by taking suitable measures to prevent surface water concentration into nearby roadways. • Prior to construction, all topsoil (top 300mm as a minimum) must be stripped and stockpiled separately from subsoil and rocky material. Soil must be stripped in a phased manner so as to retain vegetation cover for as long as possible. • Stockpiled topsoil should not be compacted and should be replaced as the final soil layer. • No vehicles/equipment may be allowed	• No visible signs of erosion	• Observation • Complaints register	• Contractor • ECO • CEO	On-going particularly during excavations

			access onto the stockpiles after they have been placed. • Topsoil obtained from sites with different soil types must not be mixed. • Topsoil stockpiles must not be contaminated with any foreign matter, which may inhibit the later growth of vegetation and micro-organisms in the soil. • Soil must not be stockpiled on drainage lines or near watercourses • Vehicles must use the existing access route. • Where required, cut-off trenches can be installed to divert substantial run-off and prevent erosion as and when necessary. • Sensitive areas such as watercourses should be cordoned off so that vehicles and construction personnel cannot gain access to these areas. • Where access cannot be avoided into sensitive areas, the amount of vehicle and personnel traffic should be kept to a minimum and should make use of only one route. • Soil erosion must be prevented at all times along the access road. • Any runnels or erosion channels will be backfilled and compacted, and the area/s restored to a proper condition. • Limit ponding on the surface and ensure storm water runoff is channelled from the site. The method used will be appropriate to the expected storm water flows and the topography and geology of				

			the site. • The Contractor will be liable for any damage to downstream property caused by the diversion of overland storm water flows.				

9.21 USE OF CEMENT AND CONCRETE

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Soil pollution from waste concrete from concrete casting activities and washing of trucks.	• To conserve soils, surface and groundwater. • To minimise waste concrete from polluting the environment	• NEMA • NEMWA • HSA • SES	The Contractor is advised that cement and concrete are regarded as highly hazardous to the natural environment due to their high pH and the chemicals contained therein. To avoid ground pollution the following must be adhered to: • Pre-mix concrete shall be the preferred option where possible. • The batching / mixing area must be properly designated and indicated on the site plan and it will be kept neat and clean at all times. • No batching / mixing activities will occur on a permeable surface. • All runoff from such areas will be strictly controlled, with contaminated water collected, stored / contained and disposed of at an approved waste disposal site. • Unused cement bags will be stored appropriately so as not to be affected by rain / runoff.	• Areas of construction are clear of all concrete residue/waste following construction.	• Observation • Site Plan	• Contractor • ECO • CEO	Throughout the construction phase

			• Used cement bags will be stored so as to prevent windblown dust and potential water contamination. Used bags will be disposed of regularly via the solid waste management system detailed previously. • Concrete transportation will not result in spillage. • To prevent spillage onto roads, ready mix trucks will rinse off the delivery shoot into a suitable sump prior to leaving the site. • All contaminated water and fines from exposed aggregate finishes will be collected and stored in sumps for disposal at an approved waste disposal site. • The visible remains of the batch plant and concrete, either solid, or from washings shall be physically removed immediately and disposed of appropriately at a registered landfill site.				

9.22 SITE CLEAN-UP AND REHABILITATION

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Erosion • Wrong seeding	• Successful rehabilitation of all damaged areas	• BDA • FA • SES	• The Contractor must ensure that all temporary structures, materials, waste and facilities used for construction activities are removed upon completion of the project.	• No loss of topsoil due to construction activities • No loss of	• Rehabilitation Plan • Observation	ECO CEO Contractor	On completion of construction Random surveys by landowner

	• Prevention of erosion. • To ensure that the site is rehabilitated to as close to its original state as possible. • To ensure that the site is clean and neat. • Minimize claims and litigation from landowners		• Fully rehabilitate (e.g. clear and clean area, rake, pack branches etc.) all disturbed areas and protect them from erosion. • All replaced equipment and excess gravel, stone, concrete, bricks, temporary fencing and the like shall be removed from the site upon completion of the work. • No discarded materials of any nature shall be buried on the site or on any other land within the site. • Re-seeding shall be done on disturbed areas as directed by the CEO. • The Contractor shall dispose of all excess material on site in an appropriate manner and at a designated place. • All anticipated crop damage shall be noted while access negotiations are underway. • All damage to commercial crops shall be recorded immediately. • All claims for compensation emanating from crop damage should be directed to the ECO for appraisal. • The Contractor shall be held liable for all unnecessary damage to crops and the environment.	topsoil due to construction activities • All disturbed areas successfully rehabilitated within three months of completion of the contract • ·No visible erosion scars three months after completion of the contract • No open fires shall be allowed on site under any circumstance • No evidence of rubble or litter left on site.			

9.23 MONITORING OF EMPR COMPLIANCE

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• To implement an on-going monitoring and performance audit programme	• The correct and successful implementation of impact mitigation measures in order to reduce adverse impacts on environmental conditions needs to be ensured by a proper monitoring program. • Monitoring of the general implementation of/adherence to the EMPr shall be the responsibility of the ECO. • Reporting on adherence/compliance to stipulations as communicated to contractors, shall take place during scheduled site meetings.	• Observation • Audit Reports	• ECO & • Contractor • CEO	On-going during the site establishment and construction. phase.

9.24 DOCUMENT CONTROL

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• To ensure compliance with the requirements of the regulatory authority • To assign roles and responsibilities to ensure compliance • To implement and comply with the requirements of the EMPr.	• A copy of the EMPr and the EA will be made available on site at all times. • The EMPr as well as the EA will be used for referral as the project progresses. The EA will also be presented to the authorities at any random time that they might visit the site.	• Availability of an EMPr copy on site.	• ECO & • Contractor • CEO	On-going during the construction phase.

10. SUMMARY OF LAND OWNER DETAILS AND CONDITIONS

All contact with the Landowners shall be courteous at all times. The rights of the Landowners shall be respected at all times and all staff shall be sensitised to the effect that there are other private properties involved in the project. Transnet shall ensure that all agreements reached with the Landowner are fulfilled. Should any claim be instituted against Transnet, due to the actions of the Contractor Transnet shall hold the Contractor fully responsible for the claim until such time that the Contractor can prove otherwise with the necessary documentation.

In order to ensure compliance with Transnet's environmental policies as well as environmental legislation requirements, the following conditions are applicable:

10.1 AWARENESS AND TRAINING OF CONTRACTOR

The CEO, with the assistance of the Contractor, shall communicate all aspects of the EMPr to the site staff (i.e. site agents to labourers) prior to commencement of any environmentally disturbing activity. Basic environmental awareness training must be carried out for all employees and should be included in safety training. This training must include procedures for relocating sensitive fauna from the site. A copy of the EMPr must always be made available on site.

10.2 SITE DOCUMENTATION/MONITORING

The standard Transnet site documentation shall be used to keep records on site. All documents shall be kept on site and be available for monitoring and auditing purposes. Site inspections by an Environmental Audit Team may require access to this documentation for auditing purposes. The documentation shall be signed by all parties to ensure that such documents are legitimate. Regular monitoring of all site works by the Environmental Control Officer is imperative to ensure that all problems encountered are solved punctually and amicably. When the Environmental Control Officer is not available, the Transnet Construction Manager shall keep abreast of all works to ensure no problems arise.

Fortnightly Environmental Monitoring reports shall be submitted to the appointed Transnet Environmental Officer by the CEO with all information relating to environmental matters. The following Key Performance Indicators must be reported on a fortnightly basis:

- Complaints received from Landowners and actions taken.
- Environmental incidents, such as oil spills, concrete spills, etc. and actions taken (litigation excluded).
- Incidents possibly leading to litigation and legal contraventions.
- Environmental damage that needs rehabilitation measures to be taken.
- The following documentation shall be kept on site:
- Access negotiations and physical access plan.
- Complaints register.
- Site daily dairy.
- Records of all remediation / rehabilitation activities.
- Copy of the EMPr.

The ECO shall further prepare monthly Environmental Monitoring reports which will cover the activities undertaken as well as the status of compliance on site. Copies of the monthly reports shall be submitted to Transnet, as well as the DEA. Furthermore, monthly reports will be kept on site either as hard or soft copy.

10.3 AUDITS

- **Proposed Audit Programme**

The appointed ECO, as well as the Contractors on site, are responsible for ensuring compliance with the EMPr. It is recommended that quarterly EA and EMPr compliance audits are undertaken by the ECO. Audit reports must be compiled by the ECO and submitted to Transnet as well as the DEA. Interested and Affected Parties (Landowners) must be allowed access to the EMPr document should they so wish.

- **Audit Reporting**

The Contractor shall keep a record of all complaints received from the community and communicate them to the ECO. These complaints must be addressed and mitigated, within reason. Records relating to the compliance/non-compliance with the conditions of the EMPr as well as audits reports shall be kept in good order and shall be made available to DEA within seven days after a written request has been received. It is suggested that all records be kept for at least two years following construction activities for reference purposes.

10.4 SOCIO-CULTURAL ISSUES

- A plan of action should be drawn up in the case of an emergency (veld fire, vegetation problems etc.). Transnet contact names and telephone numbers must be available on site;
- Property owners or occupiers must be treated with respect and courtesy at all times;
- The culture and lifestyles of the communities living in close proximity to the substation must be respected;
- Removal of agricultural products is prohibited. Receipts must be obtained for any merchandise purchased or received from landowners;
- Vehicles must be driven carefully in hazardous road conditions (sharp bends, narrow roads, bad weather, children playing on or near the road, domestic animals on or near the road etc.). Vehicle movement should be kept to a minimum during rain to avoid damage to the access road;
- Environmental clauses (as referred to in this EMPr) must be included into contract documents for all Contractors;
- Tribal graves, archaeological sites and sites of historical interest in close proximity to the substation are to be treated with respect and protected.
- No firewood is to be collected except with the written consent of the landowner; and
- A register must be maintained of all complaints or queries received as well as action taken.

11. FAILURE TO COMPLY WITH THE ENVIRONMENTAL CONSIDERATIONS

The ECO will, acting reasonably, have the authority to order the Contractor to suspend part or all of the works if he causes unacceptable damage to the environment by not adhering to the specifications set out in this EMPr. The suspension will be

enforced until such time as the offending parties' actions, procedures and/or equipment are corrected and adequate mitigation measures implemented.

12. AMENDMENT OF EMPR

Any issue that may arise during the construction or operational phase of the development and that is not provided for in this EMPr may be addressed as an addendum to this EMPr. An addendum will be submitted to the client for approval prior to the implementation of the provisions contained.

13. DETAILS AND EXPERTISE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

Nsovo is conversant with the definition and general requirements of an Environmental Assessment Practitioner (EAP) as defined in Section 1 the National Environmental Management Act, 1998 (No 107 of 1998) (NEMA) and Regulation 13 of the Environmental Impact Assessment Regulations promulgated in December 2014. Nsovo is:

- Independent and Objective;
- Has expertise in conducting EIA's;
- Takes into account all relevant factors relating to the application; and
- Provides full disclosure to the applicant and the relevant environmental authority.

Table 2: Details of the EAP

Name of Company	Nsovo Environmental Consulting
Person Responsible	Masala Mahumela Pr.Sci.Nat.
Professional Registration	Registered with the South African Council for Natural Scientific Professions (SACNASP).
Postal Address	P/Bag x29, Postnet Suite 696 Gallo Manor 2052
Telephone Number	011 312 5153
Fax Number	086 602 8821
Email	masala.mahumela@nsovo.co.za
Qualifications & Experience	• B.Sc. Honours Environmental Management • B.Sc. Environmental Sciences • **7 years of experience**
Project Related Expertise	In terms of project related expertise the EAP has completed the following projects:

	• Basic Environmental Assessment for the Vaal River water pipeline for AngloGold Ashanti Mine's Vaal River Operations (North West Province, South Africa). • Environmental Impact Assessment (EIA) for Eskom's Isundu-Mbewu 400kV transmission power lines in KwaZulu-Natal (KwaZulu-Natal Province, South Africa). • Basic Environmental Assessment for the Mponeng South return water dams and pipeline (Gauteng Province, South Africa). • Basic Environmental Assessment for the West Wits Tau Tona pipeline in Carletonville (Gauteng Province, South Africa). • Environmental Impact Assessment (EIA) for the realignment of the Sasol Gas pipeline in Tembisa (Gauteng Province, South Africa). • Environmental Impact Assessment (EIA) for the deviation of the Sasol Gas pipelines in Dalview, Elspark, Verword Park, Burton Park and Mindalore (Gauteng Province, South Africa).