FINAL ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) FOR THE PROPOSED CONSTRUCTION OF QUEENS 88kV SUBSTATION AND THE LOOP-IN LOOP-OUT 88 kV POWERLINE FROM THE EXISTING GOLFVIEW TEDDERFIELD 88kV POWERLINEAND THE EXTENSION OF RWB-ZWARTKOPIES 88kV SUBSTATION AND THE 3km 88kV SERVITUDE TO THE EXISTING EYESTONE SUBSTATION PROJECT

# FINAL ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

DEA REFERENCE: 14/12/16/3/3/1/1838


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**12 February 2018**

**ACRONYMS**

| TERMS | DEFINITIONS |
|---|---|
| **BAR** | Basic Assessment Report |
| **CECO** | Contractor's Environmental Control Officer |
| **EAP** | Environmental Assessment Practitioner |
| **ECO** | Environmental Control Officer |
| **EIA** | Environmental Impact Assessment |
| **EMPr** | Environmental Management Programme. |
| **DEA** | Gauteng Department of Agriculture and Rural Development |
| **NEMA** | National Environmental Management Act |
| **SEC** | Senkosi Environmental Consulting |

**DEFINATION OF TERMS**

| TERMS | DEFINITION |
|---|---|
| **Alien species** | Plants and animals, which do not occur naturally in an area – they are brought in by humans. Alien plants often force indigenous species out of the area. |
| **Best Practicable Environmental Option** | The option that provides the most benefits or results with the least damage to the environment as a whole at a cost acceptable to society in the short- and long term. |
| **Conservation** | Protecting, using and saving resources wisely, especially the biodiversity found in an area. |
| **Construction activity** | A construction activity is any action taken by the contractor, their sub-contractors, suppliers or personnel during the construction process. |
| **Contamination** | Polluting or making something impure. |
| **Contractor** | That main organisation appointed by the Developer, through the Project Manager, to undertake construction activities on the site. |
| **Disposal** | The process of changing something so that it moves forward, improves or grows. |
| **Emissions** | The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into the environment (land, surface water, groundwater and air). |
| **Environment** | Discharging or sending out of substances or fluids, e.g. car fumes. |
| **Environmental management** | Our surroundings, including living and non-living elements, e.g. land, soil, plants, animals, air, water and humans. The environment also refers to our built, social and economic surroundings, and our effect on our surroundings. |
| **Groundwater** | Making sure that environmental concerns are included in all stages of development, so that development is sustainable. |
| **Policy** | Any resource provided by the biophysical environment. |

| TERMS | **DEFINITION** |
|---|---|
| **Solid waste** | A framework or basis for action to overcome identified problems and to achieve stated goals. A policy helps you make decisions and manage an organisations or structure. Policies are based on people's values and goals. |
| **Waste management** | Any solid, semi-solid, liquid or contained gaseous materials discarded from industrial, commercial mining or agricultural operations and from community activities. Solid waste includes garbage, |

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## 1. SCOPE OF THE ENVIRONMENTAL MANAGEMENT PLAN

In order to ensure a holistic approach to the management of environmental impacts during the construction and operation of the proposed substations and powerlines, this EMPr sets out the methods by which proper environmental controls are to be implemented by the Contractor and all other parties involved. The duration over which the contractor's controls shall be in place cover the construction period of the project as well as the limited time after contract completion defined by the General Conditions of Contract, and the project specifications, as the defects notification period (maintenance period).

The specifications outlined in this EMPr are thus applicable to all activities undertaken by the Developer as well as appointed contractors and all persons involved in the execution of the works including sub-contractors, the workforce, suppliers and volunteers for the duration of construction, operation and future maintenance. An Environmental Code of Conduct should also be developed that provides a simplified set of rules that should be adhered to by all persons involved with the project at all times. This is to be displayed at strategic points to ensure constant environmental awareness.

## 2. OBJECTIVES

The EMPr has been compiled to provide recommendations and guidelines according to which compliance monitoring can be done during construction of the substations and the powerlines as well as to ensure that all relevant factors are considered to ensure for environmentally responsible development.

This EMPr relevant for this proposed project informs all relevant parties [the Project Coordinator, the Contractor, the Environmental Control Officer (ECO) and all other staff Employed by the contractor at the site] as to their duties in the fulfilment of the legal requirements for the construction and operation of the substations and powerlines with particular reference to the prevention and mitigation of anticipated potential environmental impacts. All parties should note that obligations imposed by the EMPr are legally binding in terms of the environmental authorisation granted by the relevant environmental permitting authority.

**The primary objectives of an EMPr are to:**

- To describe action plans for achieving the mitigation measures.
- To indicate responsibilities, schedules and staff resources regarding the Implementation of these action plans.
- To describe a monitoring programme, this will enable review of the success of the EMPr and the provision of such information to the relevant decision-makers.
- Appropriate Environmental Management measures and requirements 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 construction.

# 3. OVERVIEW OF THE PROPOSED PROJECT

## 3.1 Project Scope & Description

a) This environmental management programme provide mitigation measures for the construction and operation of the following project components:
    a) The extension of the existing RWB Zwartkopies 88kV Substation and a 2.6km 132kV Powerline Servitude to the existing Tedderfield and Golfview substations.
    b) Construction of the new Queens 88/11kV Substation and associated loop-in and loop-out 132kV Powerlines Servitude to the existing Golfview Tedderfield 132kV Powerline.

**Construction Activities**

The construction of the above project components will involve the following:

- The construction footprints will be surveyed and demarcated based on the project design drawings.
- Construction footprints will be cleared of vegetation and topsoil.
- A site camp and materials lay-down area will be established on site.
- Construction will take place with the aid of an on-site labour force and heavy plant machinery.
- Equipment and materials will be delivered to the site as and when required.
- Some construction materials and equipment will be stored on site.
- Portions of the site where construction activities are actively commencing will be barricaded.
- The installation of infrastructure may require the excavation of trenches of varying depths. Deep open excavations will be demarcated or securely fenced in.
- Construction will be limited to normal working hours (7am to 6 pm, weekdays, excluding weekends and public holidays).
- It is anticipated that the construction process will be phased

## 2 Project Location

The proposed substations are to be constructed on Hartsenberonfontein 332-IQ, Kromvlei 142-IR and Zwartkopjes 143-IR. The map below shows the approximate locations of the sites.

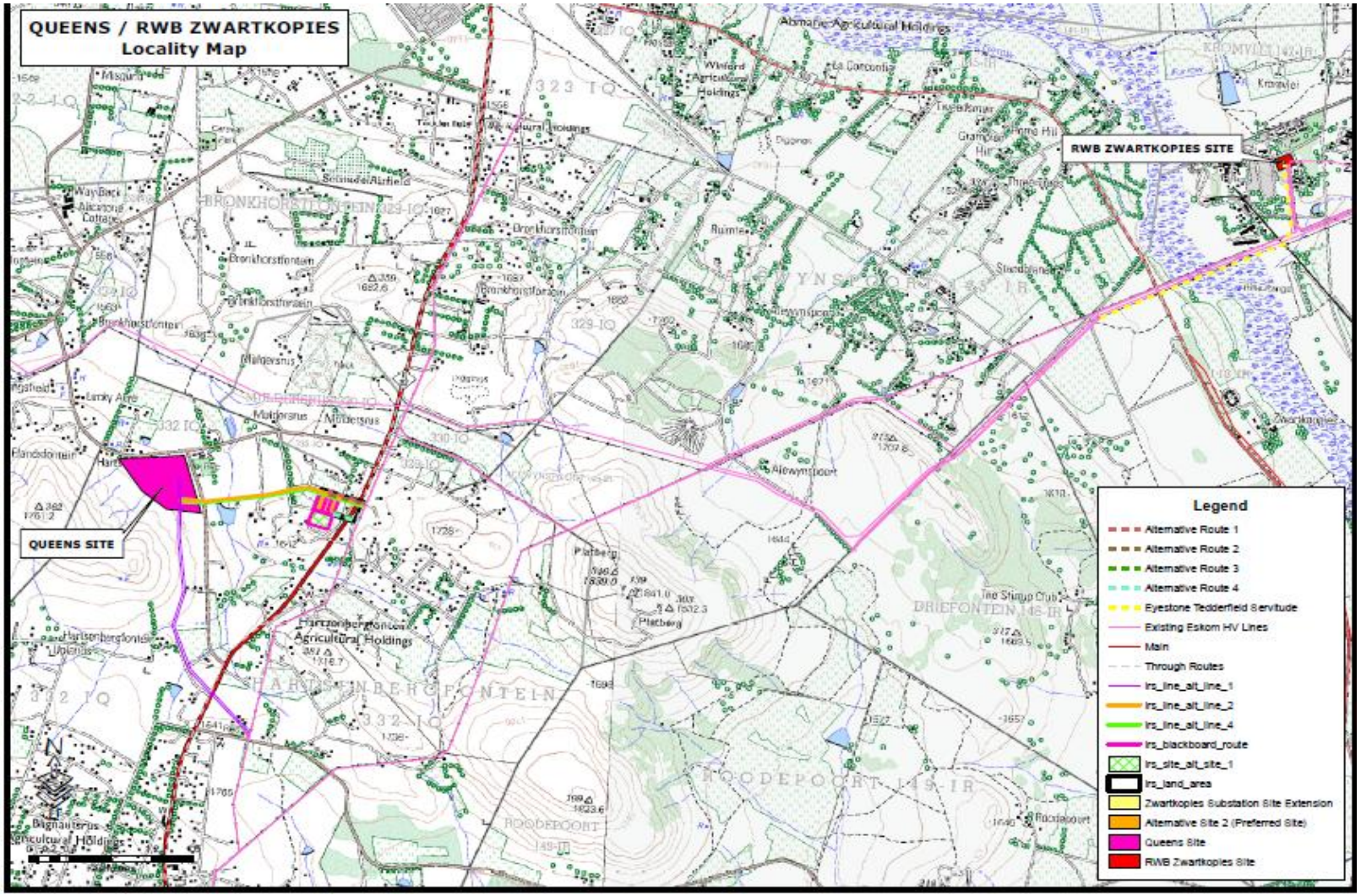


**Figure 1: Locality Map**

### 3.3 Layout of the EMPr

The EMPr is divided into three phases of development. Each phase has specific issues unique to that period of the planning and design, construction and operation. The impacts are identified and given a brief description. The three phases of the development are then identified as below:

#### 3.3.1 Planning & Design Phase

This section of the EMPr provides management principles for the planning and design phase of the project. Environmental actions, procedures and responsibilities as required during planning & design phase are specified.

#### 3.3.2 Construction Phase

This section of the EMPr provides management principles for the construction phase of the project. Environmental actions, procedures and responsibilities as required during the construction phase are specified. These specifications will form part of the contract documentation and therefore the Contractor will be required to comply with these specifications to the satisfactory of the Project Coordinator and Environmental Control Officer.

#### 3.3.3 Operational and Maintenance Phase

This section of the EMPr provides management principles for the operation and maintenance phase of the project. Environmental actions, procedures and responsibilities as required from Tshwane Metropolitan Municipality during the operation and maintenance phase are specified.

## 4. SUMMARY OF IMPACTS ASSCOCIATED WITH THE PROPOSED PROJECT

Below is a summary of anticipated impacts expected at different phases of the project lifecycle as identified in the Basic Assessment Report (BAR) The mitigation measures have been provided in section 10 of this EMPr.

**Table 1 : Summary of Impacts**

| PLANNING AND DESIGN PHASE | | | |
|---|---|---|---|
| **ASPECT** | **IMPACT** | **SIGNIFICANCE BEFORE MITIGATION** | **SIGNIFICANCE AFTER MITIGATION** |
| Policy and legal requirements | Disregard of Environmental statutes leading to construction without environmental authorisation | Very High Negative Impact | Low Negative Impact |
| Site Establishment | Site Establishment and Demarcation leading to indiscriminate destruction of the environment | Medium Negative Impact | Low Negative Impact |
| Environmental Awareness | Lack of Environmental Awareness leading to destruction of the environment | Medium Negative Impact | Medium Negative Impact |
| Policy and legal requirements | Disregard of Environmental statutes leading to construction without environmental authorisation | Very High Negative Impact | Low Negative Impact |
| **CONSTRUCTION PHASE** | | | |
| **ASPECT** | **IMPACT** | **SIGNIFICANCE BEFORE MITIGATION** | **SIGNIFICANCE AFTER MITIGATION** |
| Biodiversity | Destruction of Legally protected species | Medium Negative Impact | Low Negative Impact |
| | Natural Habitat fragmentation, Habitat transformation | Medium Negative Impact | Low Negative Impact |
| | Soil Disturbance and Alien and Invader Plant Species proliferation | High Negative Impact | Low Negative Impact |
| | Degradation of Natural Habitats due to Pollution | Medium Negative Impact | Low Negative Impact |
| Geology and Soils | Disturbance of surface geology (Excavations) | Medium Negative Impact | Medium Negative Impact |
| Social | Job creation and injection to the local economy during the construction phase. | Very High Positive Impact | Very High Positive Impact |

| OPERATIONAL PHASE | | | |
|---|---|---|---|
| **ASPECT** | **IMPACT** | **SIGNIFICANCE BEFORE MITIGATION** | **SIGNIFICANCE AFTER MITIGATION** |
| | Increased Generation of Waste and increased need for waste Removal Services | Very High Impact | Medium Impact |
| Health, Safety and Security | Health and Safety impacts on employees | Medium Negative Impact | Low Negative Impact |
| Traffic | Traffic Volume Increase | Medium Negative Impact | Low Negative Impact |
| Social | Job creation as a result of construction and operation of the proposed Upgrade of informal settlement of informal settlement | Very High Positive Impact | Very High Positive Impact |

# 5. LEGAL REQUIREMENTS

## 5.1 General Requirements

This section has attempted to identify relevant laws and regulations that are applicable to the proposed project. The purpose of this is to provide the applicant with understanding of how the different sections of legislations define and integrate the different spheres of the environment. Understanding these will ensure long term and continued alignment with their principals. The applicant should ensure that legislation applicable to the development is kept up to date.

The Contractor should note that obligations imposed by the EMPr are legally binding in terms of environmental statutory legislation. Further, the EMPr is enforceable through additional conditions to the general conditions of contract that pertain to this project. In the event that any rights and obligations contained in this document contradict those specified in the standard or project specifications then the latter shall prevail. It is expected that the Contractor is conversant with all legislation pertaining to the environment, including provincial and local government ordinances, which may be applicable to the contract. All prospective contractors must sign the declaration of acceptance of the EMPr, included at the end of this document.

**Table 2: Legal Requirements**

| ACT, ORDINANCE, BY-LAW | SECTION | DESCRIPTION | RELEVANCE TO THIS PROJECT |
|---|---|---|---|
| National Environmental Management Act (No 107 of 1998) as amended December 2014 | 24 and 24D | List of activities requiring Authorisation before commencing | Environmental approvals and conditions are made in terms of this act. (refer to Environmental Authorisation)<br>If any additional activities listed are planned, then permission to commence needs to be applied for. |
| | S 28(1) | Duty of care responsibilities | Responsible for the duty of care of natural assets |
| National Environmental Management: Waste Act (No 59 of 2008) | Chapter 4t3 and 5 | Regulates waste management in order to protect health and the environment. | Calls for reduction, re-use, recycling and recovery of waste, sets out requirements for storage, collection and transportation of waste |
| National Water Act (No 36 of 1998) | S 3(3) | Regulation of flow and control of all water in South Africa | Ensure usage of water remains within limits |
| | S 19 | Pollution prevention | Prevent pollution of water sources e.g. via storm-water |
| Conservation of Agricultural Resources Act (No 43 of 1983) | Reg 15 | Declaration of weeds and invader plants | Listed invader plants |
| | Reg 15 | Combating invader plants | Alien vegetation must be removed from premises. |
| Environment Conservation Act (No 73 of 1989) | Reg | Noise regulations | Legislation that governs noise limits |
| Occupational Health and Safety Act (No 85 of 1993) | All | Primarily aimed at ensuring the health and safety of persons at work and visitors. Specifies the basic systems that need to be in place and measures that need to be taken. | The staff and visitors to site need to be protected from health and safety risks. |
| | S 9(1) | Every Employer must conduct his undertaking so as to ensure that persons other than his Employees who may be directly affected by his | The development must minimise the hazards to both staff working on the site and visitors. |

| ACT, ORDINANCE, BY-LAW | SECTION | DESCRIPTION | RELEVANCE TO THIS PROJECT |
|---|---|---|---|
| | | activities are not thereby exposed to hazards to their health and safety. | |
| Hazardous Chemical Substances regulations (25 August 1995) | 9A(1) | Storage and handling of hazardous chemical substances | Need to ensure the safety of staff working with hazardous chemicals (as well as safe storage, use and disposal of containers. |
| National Environment Management: Air Quality Act (No. 39 of 2004) | S 27, 32, 34, 35, | Prevention of air pollution (dust, smoke, noise and offensive odours) | The necessary steps to be taken in prevention of air pollution on site. |
| National Heritage Resources (Act No. 25 of 1999) | S 44(1) | Preservation and protection of Heritage resources | Protection of heritage resources that may be found on site. |

## 6. GENERAL CONDITIONS OF THE EMPR

- This EMPR shall be binding on all the parties involved in the construction and operational phases and shall be enforceable at all levels of contract and operational management within the project.
- The EMPR shall be deemed a binding commitment by the parties to act within the intent and spirit of sound environmental management and to cooperate and enforce the specifications contained therein, as and where necessary.
- The EMPR recognises and enables the force of law attached to environmental aspects of the project, as contained in the Environmental Authorisation for the project and shall be implemented accordingly.
- Work shall at all times be approached with due concern for the natural and social environment. Management and site procedures shall be towards minimising environmental impact and / or damage in all aspects of the work.
- Archaeological remains, artificial features and structures older than 60 years are protected by the Natural Heritage Resources Act, Act 25 of 1999. Should any archaeological artefact (e.g. ostrich eggs, shell flasks), unmarked human burials or heritage resources be exposed during excavation for the purpose of laying foundations or site clearing and levelling, construction in the vicinity of the finding must be stopped. An archaeologist must be called to the site for inspection and the South African Heritage Agency advised accordingly. Under no circumstance may any artefacts be destroyed or removed from the site.
- Where (if) bedrock is to be affected a Palaeontological Desk Top study must be undertaken to assess whether or not the development will impact upon palaeontological resources, or at least a letter of exemption from an accredited Palaeontologist is needed to indicate that this is unnecessary.
- The gaining of water for construction purposes must at all times comply with the permitting and licence requirements of the Department of Water Affairs and Sanitation(DWS), where applicable.
- Blasting work that may be required on site shall be carried out entirely within the provisions of the Explosives Act, Act 26 of 1956 and all other relevant engineering and safety standards.
- Execution of work falling within the ambit of this EMPR and Environmental Specifications shall be carried out in accordance with Method Statements, where required by the Resident Engineer (RE) and / or Environmental Control Officer (ECO. A method statement is a written submission by the Contractor to the RE setting out the plant, materials, labour, timing and method the Contractor proposes using to carry out an activity, in such detail that the Resident Engineer and ECO are able to assess whether the Contractor's proposal is in accordance with the EMPR and its specification and will produce results in accordance with the intent of the specifications.
- The RE or a designated Engineer / Manager may, at his / her sole discretion, stop any work, activity or process not in accordance with this directive.

- Specifications contained herein are divided into various sections. A restriction or condition contained in one section shall apply mutatis mutandis to other sections. This EMPR and Environmental Specifications are applicable mutatis mutandis to the Works in its entirety. The EMPR shall be expanded, customised and added to as may be necessary to meet any specific condition that may be encountered on the site as a whole.
- Once having been accepted by DEA this EMPR shall be seen as a dynamic document. However, any substantial changes shall be submitted to DEA for acceptance before any such changes may be effected.
- Project and Site Management personnel shall furthermore establish appropriate management structures, liaison and communication forums to integrate all construction activities into existing safety programmes. Accountability, joint functions and specific responsibilities must be clearly defined in formal documentation.

# 7. ADMINISTRATION OF ENVIRONMENTAL OBLIGATIONS

## 7.1 Management Structure

The Contractor must compile an organogram illustrating the management structure for inclusion within the final EMPr. This organogram should depict the organisation structure of the Contractor, and must contain supporting documentation to demonstrate the environmental responsibilities, accountability and liability of the Contractor's Employees. The Contractor should assign responsibilities for the following:

- Reporting structures.
- Actions to be taken to ensure compliance.
- Overall design, development and implementation of the EMPR.
- Documenting the environmental policy and strategy.
- Implementing the EMPR in all stages/phases of the project.
- All the aspects which require action under the other core elements and sub-elements of the EMPR.
- All official communication and reporting lines including instructions, directives and information shall be channelled according to the organisation structure.

## 7.2 Key Role Players

In order to ensure the development and effective implementation of the EMPr, it is necessary to identify and define the responsibilities and authority of the various persons that will be involved in the project. The following key role players will be involved in the administration and implementation of the EMPr:

- Applicant/Developer
- Contractor (C)
- Environmental Site Officer (ESO);
- Environmental Control Officer (ECO);
- Consulting Engineers (CE);
- Engineers Representative (ER);
- Project Manager (PM)

### 7.2.1 Applicant/Developer

The Applicant is the responsible entity for monitoring the implementation of the EMPr and compliance with the authorisation. However, if the applicant appoints a contractor to implement the project the implementation of the proposed mitigation measures documented in this EMPr on their behalf and responsibilities will then fall under the successful contractor's responsibilities, including the outlined responsibilities in the section that follows.

### 7.2.2 Contractor

The successful contractor shall:

- Be responsible for the finalisation of the EMPr in terms of methodologies / method statements which are required to be implemented to achieve the environmental specifications contained in this EMPr and the relevant requirements contained in the environmental authorisation (EA);
- Be responsible for the overall implementation of the EMPr in accordance with the requirements of the developer and the EA;
- Ensure that all third parties who carry out all or part of the contractor's obligations under the contract comply with the requirements of this EMPr; and

### 7.2.3 Environmental Control Officer

For the purposes of implementing the conditions contained herein, the applicant shall appoint independent suitably qualified ECO for the contract. The ECO shall be the responsible person for ensuring that the provisions of the EMPr as well as the environmental authorisation are complied with during the construction period.

The ECO will be responsible for issuing instructions to the contractor where environmental considerations call for action to be taken. The ECO shall submit regular written reports to the applicant and the environmental authority (DEA) as required. The ECO's duties will include the following:

- Confirming that all the environmental authorisations and permits required in terms of the applicable legislation have been obtained prior to construction commencing;
- Monitoring and verifying that the EMPr, EA and any other licence conditions are adhered to at all times and taking action if such conditions are not followed;
- Monitoring and verifying that environmental impacts are kept to a minimum;
- Reviewing and approving construction method statements with input from the ESO and engineer, where necessary, in order to ensure that the environmental conditions contained within this EMPr and EA are adhered to;
- Inspecting the site and surrounding areas on a regular basis regarding compliance with the EMPr and EA;
- Monitoring the undertaking by the contractor of environmental awareness training for all new personnel on site;
- Ensuring that activities on site comply with all relevant environmental legislation;
- Ordering the removal of, or issuing spot fines for person/s and/or equipment not complying with the specifications of the EMPr and/or environmental authorisation;
- Checking the register of complaints kept on site and maintained by the ESO and ensuring that the correct actions were taken in response to these complaints;
- Checking that the required actions were undertaken to mitigate the impacts resulting from non-compliance;
- Reporting all incidents of non-compliance;

- Conducting annual environmental performance audits in respect of the activities undertaken relating to the project. The ECO shall also submit compliance audit reports to DEA, in accordance with the requirements of the environmental authorisation. Such reports shall be reviewed by the applicant, prior to submission;
- Keeping a photographic record of progress on site from an environmental perspective. This can be conducted in conjunction with the ESO as the ESO will be the person that will be onsite at all times and can therefore take photographic records weekly. The ECO would need to check and ensure that the ESO understands the task at hand;
- Recommending additional environmental protection measures, should this be necessary; and
- Providing report back on any environmental issues at site meetings.

The ECO must be suitably experienced with the relevant environmental management qualifications and preferably competent in construction related methods and practices.

### 7.2.4 Environmental Site Officer

The contractor shall appoint a nominated representative of the contractor as the ESO for the duration of the contract. The ESO will be site-based and shall be the responsible person for implementing the environmental provisions of the construction contract. The ESO must be on the site at all times with the duties to:

- Ensure that the EA and any permits required in terms of the applicable legislation have been obtained prior to construction commencing;
- Review and approve construction method statements with input from the ECO and engineer, where necessary, in order to ensure that the environmental specifications contained within the construction contract are adhered to;
- Assist the contractor in finding environmentally responsible solutions to problems;
- Provide environmental training to contractor employees and provide evidence to ECO, and keep such evidence as their records
- Keep accurate and detailed records of all activities on site;
- Undertake daily toolbox talks alerting the workforce to particular environmental concerns associated with the work of the day
- Keep a register of complaints on site and recording community comments and issues, and the actions taken in response to these complaints;
- Ensure that required actions are undertaken to mitigate the impacts resulting from non-compliance to any of the requirements of the EMPr, EA and any other permits;
- Report all incidences of non-compliance to the ECO and contractor, and
- Submit regular written reports to the ECO, but not less frequently than once a month.

### 7.2.5 Consulting Engineer

The consulting engineer (CE) would be appointed by the applicant to design and specify the project engineering aspects of the proposed substation and powerline construction. Generally, the CE runs the

works contract and may also fulfil the role of project manager (PM) on the applicant's behalf. The CE must be familiar with the requirements of the EMPr and EA, and sign-off on all method statements.

### 7.2.6 Engineer's Representative

The engineer's representative (ER) is the consulting engineer's representative on site. The ER has the power or mandate to issue site instructions and variation orders to the contractor following requests from the ECO, for example. The ER also oversees site work and is the liaison with the contractor and ECO. The ER must be familiar with the requirements of the EMPr and EA, and sign off on all method statements if mandated to do so on by the CE.

### 7.2.7 Project Manager

The PM has overall responsibility for managing the project, contractor/s and sub-contractors and ensuring that the environmental requirements are met.

- All decisions regarding environmental procedures must be approved by the PM.
- The PM has the authority to stop construction activities if there is contravention of the EMPr in accordance with an agreed warning procedure.

## 7.3 Compliance Monitoring and Enforcement

Non-compliance with the conditions of the EMPr and EA must be viewed as a breach of appointment contract for which the construction contractor/s will be held liable. The latter is deemed not to have complied with the EMPr if:

- There is evidence of contravention of the EMPr, its environmental specifications or the Method Statements developed by the contractor within the boundaries of the construction site or areas of contractor responsibility;
- Construction related activities take place outside the defined boundaries of the site;
- Environmental damage occurs due to non-compliance;
- The contractor fails to comply with corrective or other instructions issued by the ECO within specified time periods; or
- The contractor fails to respond adequately to complaints from the community and/or authorities.

The proponent and the construction contractors are liable for any construction rehabilitation costs associated with their non-compliance with the EMPr. This rehabilitation will be undertaken to the satisfaction of the ECO.

# 8. ENVIRONMENTAL MANAGEMENT MITIGATION MEASURES

## 8.2 Scope

This specification covers the requirements for controlling the impact on the environment of construction activities as well as the operations of the various components of the project. The environmental mitigation and management measures recommended by the various specialists' studies are addressed in this section. Sustainable mitigation measures have been provided in line with the sustainable guidelines.

| Development phase | Pre-construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| **Planning** | • Appointment of ECO and other role players including the ESO<br>• All role-players must understand their part in the implementation of the EMPr<br>• Required method statements are compiled and approved<br>• Any licences and/or permits required have been obtained | • Minimise negative impacts through the implementation of EMPr<br>• Formalise environmental responsibilities<br>• Legislative compliance | • Contracts in place<br>• Site documentation including EMPr, EA and method statements are in place | Once-off | Contractor<br>CE |
| **Site preparation:** | • Soil and vegetation to be stripped only from project footprint area<br>• No-go areas (if any) to be clearly fenced off<br>• Construction camp to be clearly demarcated including all Contractor's buildings, lay down areas, etc | • Clear indication of construction footprint<br>• Avoid/reduce impacts on surrounding environment, infrastructure and services | • Method statement detailing location and management of all access points and roads.<br>• Method statement regarding establishment and management of construction camp | Once-off | Contractor<br>ESO |
| **Method statements** | • Contractor to supply method statements as required by the Engineer including procedures to be followed for incidents such as oil spills, storm water management, emergencies, safety, etc. | • Protocols to minimise negative impacts on surrounding environment | • Approved method statements in place | Once off | Contractor<br>ESO<br>ECO<br>CE |

| Development phase | Pre-construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| | | | | | |
| **Employment opportunities for local communities** | • Identify opportunities for the Employment and training of people and contractors from the surrounding towns. Opportunities for local Employment may include activities related to<br>• site clearance, digging of trenches and building of the substations and powerlines.<br>• Based on these opportunities, develop a recruitment and training strategy that the main construction contractors will have to adhere to.<br>• Monitor implementation of local recruitment and training strategies, including monitoring of corruption and nepotism.<br>• Focus on the Employment and training of the youth and females<br>• Develop a register of relevant local Small Medium and Micro Enterprises (SMME) in the surrounding towns.<br>• Ensure that SMMEs on the register are made aware of Eskom's supplier requirements and standards.<br>• Empower SMME to meet Eskom's requirements and standards | • Job creation<br>• Upskill local people<br>• Benefit local SMMEs | • Provide Employment locally<br>• Improve lives of local people where possible<br>• Benefits to local economy through increased spending power of those Employed | Once-off | Applicant<br>Contractor |

| Development phase | Pre-construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| | | | | | |

| Development phase | Construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| **Topsoil and associated stockpiles** | • The topsoil should be stripped off so that material can be re-used during the rehabilitation phase.<br>• Areas chosen for the topsoil stockpiles should be kept to a minimum and should involve the least disturbance to vegetation.<br>• Translocation of topsoil stockpiles from one place to another or importing topsoil from other sources that may contain alien plant material should be avoided. | • Minimise disturbance and loss of soil<br>• Remain within construction footprint | • Erosion is avoided or kept to a minimum<br>• Re-use of topsoil during rehabilitation process | Daily monitoring | ESO<br>ECO<br>Contractor |

| Development phase | Construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| **Pollution of groundwater through rainwater infiltrating stockpiles** | • Compact footprint area of stockpiles to minimize groundwater infiltration<br>• At the Zwartkopies substation site storm water run-off from stockpiles must be diverted into storm water systems with silt traps to avoid contamination | • Minimise storm water runoff<br>• Minimise groundwater contamination | • Storm water is controlled | Daily monitoring | Contractor<br>ECO<br>ESO |
| **Loss of plant communities, natural habitats and fragmentation thereof** | • Ensure that workers do not unnecessarily trample vegetation.<br>• All infrastructures should be confined to the areas demarcated for such and no infrastructure should be permitted in areas not correctly prepared.<br>• The project should retain as small footprint as possible to minimise impacts to surrounding vegetation and soil.<br>• All areas not within the footprint of the project area where soil has been compacted or vegetation disturbed, should be immediately ripped and re-vegetated immediately. | • Minimise impacts on vegetation during construction process<br>• Keep within construction footprint | • Impacts to vegetation and soil beyond what is necessary are avoided. | Daily monitoring | ESO<br>ECO<br>Contractor |
| **Loss of vegetation and seed banks due to** | • Ensure that proper measures are in place to contain any oil and diesel leakages or spills. | • Prevent pollution of environment | • No oil spillages<br>• No damage due to oil spillages | Daily monitoring | ESO<br>ECO |

| Development phase | Construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| **oil and diesel spillages** | • Proper handling and storage practices, as well as readily available oil-spill kits should minimise the risks associated with such spills.<br>• Spills should be cleaned up immediately by removing the polluted soil and disposing thereof at an appropriate registered waste facility<br>• Drip trays to be placed under vehicles that stand for more than 24 hours. Size of drip trays must be sufficient to contain the amount of oil in the vehicle<br>• Suitable covered containers should be provided for disposal of waste. All used oils, grease or hydraulic fluid should be placed therein and these containers should be removed from the site on a regular basis for disposal at an appropriate registered waste facility. | • Minimising occurrence of such impacts | • Comprehensive method statement addressing handling and storage of oil and emergency spills procedure<br>• No complaints from Applicant or DEA | | CONTRACTOR |
| **Dust** | • Keep vegetation clearance to a minimum.<br>• Regular wetting of access roads to reduce dust generated by vehicles.<br>• Wetting of project site to reduce dust generated by construction activities | • Minimise nuisance factor of construction activities on School and Rand water & surrounding | • No complaints from School and Rand water management<br>• No complaints from surrounding communities and landowners | Daily monitoring | ESO<br>ECO<br>Contractor |

| Development phase | Construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| | | communities and landowners | • Method statement regarding dust control in place | | |
| **Increased potential of invasion by alien invasive species** | • Early detection and eradication of alien vegetation species through on-going monitoring and eradication programme<br>• Control and manage the removal of vegetation | • Avoid legal infringements by preventing spread of alien vegetation | • No noticeable spread of alien vegetation on site | Ongoing monitoring | ESO<br>ECO<br>Contractor |
| **Dust** | • Keep vegetation clearance to a minimum.<br>• Regular wetting of access roads to reduce dust generated by vehicles.<br>• Wetting of project site to reduce dust generated by construction activities<br>• Vegetation removal to be undertaken in consultation with the ECO | • Minimise nuisance factor of construction activities on School and Rand water & surrounding communities and landowners | • No complaints from School and Rand water management<br>• No complaints from surrounding communities and landowners<br>• Method statement regarding dust control in place | Daily monitoring | ESO<br>ECO<br>Contractor |
| **Fauna** | • Workforce to be instructed that no animals or birds may be caught or killed<br>• Workforce to be informed that poaching is illegal and if they are | • Minimise disturbance and mortality to animals and birds | • No complaints from School and Rand water management and surrounding | Daily monitoring | ESO<br>ECO<br>Contractor |

| Development phase | Construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| | caught poaching they will be dismissed<br>• Construction vehicles to keep to speed limits to limit killing animals and birds on site<br>• Construction activities to take place during daylight hours to reduce risks to fauna | | landowners and communities | | |
| **Erosion** | • Monitoring for presence of rills and gullies in the soil.<br>• Limit disturbance to the construction footprint<br>• Prevent uncontrolled water flow through diverting water into run-off paths and storm water systems with silt traps | • Minimise disturbance and loss of topsoil<br>• Minimise scarring of earth<br>• Reduce sedimentation of storm water | • No erosion scars<br>• No loss of topsoil<br>• Construction footprint is not exceeded<br>• All damaged areas successfully rehabilitated | As and when required but especially towards end of construction | CE<br>ESO<br>ECO<br>Contractor |
| **Lowering of groundwater levels** | • Foundations of any building on the proposed new Queens substation to be less than 5 m to avoid going below water table if possible<br>• If excavation goes below 5m, then drains and cut-off trenches must be built around the proposed construction area to prevent run-off water from entering pit | • Avoid impacting on water table | • No complaints from surrounding landowners re lowering groundwater levels | During excavation and construction of foundations | Engineer<br>Contractor |

| Development phase | Construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| **Fire** | • No open fires are to be permitted on-site.<br>• Method statement by Contractor that indicates how wild fires will be dealt with from adjacent properties.<br>• Fire breaks should be done in accordance with the station's fire breaks procedure.<br>• Sufficient fire extinguishers and other fire-fighting equipment to be supplied in construction area | • Maintain safety on site and in surrounding community<br>• Reduce risk of veld fires and destruction of natural habitat | • No veld fires started by the workforce<br>• No claims from landowners for damages due to veld fires<br>• Method statement in place and adhered to | Daily monitoring | ECO<br>ESO<br>Contractor |
| **Noise** | • All construction vehicles must be in good working order<br>• The use of construction machinery should be limited between 06h00 and 18h00 on weekdays only.<br>• Work hours must be strictly enforced unless permission is given to work beyond these hours<br>• No construction should occur during weekends, unless the adjacent residents have been notified in writing at least three days in advance.<br>• Noise reduction is essential and the Contractor must endeavour to limit unnecessary noise, especially loud | • Minimise nuisance factor of construction of substations and powerlines | • No complaints from surrounding landowners and residents | As and when required | ECO<br>ESO<br>Contractor |

| Development phase | Construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| | talking, shouting or whistling, radios, sirens or hooters, motor revving, etc.<br>• The contractor must ensure that noise levels remain within acceptable limits and that labourers have safety equipment such as ear plugs when undertaking of activities with high levels of noise | | | | |
| **Impacts on heritage resources** | • Workforce must be informed what heritage resources are and what must occur if such resources are found;<br><br>If any heritage resources are unearthed during construction, then:<br>• All work in immediate area of the historical findings must stop and a 5 m perimeter boundary must be placed around the find<br>• A registered heritage specialist must be called to site to investigate the find<br>• The Free State Provincial Heritage Resources Agency (PHRA) must also be informed<br>• The heritage specialist will assess the significance of the resource and provide guidance on the way forward.<br>• Permits must be obtained from the Free State PHRA if heritage | • Protecting the country's heritage resources from damage or destruction | • Workforce understanding of and compliance with process to deal with chance finds.<br>• No damage to heritage resource | Ongoing | ECO<br>ESO<br>Contractor |

| Development phase | Construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| | resources are to be altered, removed or destroyed<br>• Work can only commence once go-ahead is given by the heritage specialist<br>• Under no circumstances may any heritage material be destroyed or removed from site unless under direction of a heritage specialist.<br>• If remains are found that could be human, then the SAP must be informed immediately | | | | |
| **Waste management** | • The contractor must provide and maintain a method statement for "solid waste management". The method statement must provide information on the proposed licensed facility to be utilised and details of proposed record keeping for auditing purposes.<br>• Waste must be taken to registered waste landfill sites as mentioned in the method statement.<br>• Proof of legal disposal must be produced on request.<br>• Any illegal dumping of waste must not be tolerated, no on-site burning, | • Adherence to method statement and correct storage and disposal of waste<br>• Promote waste separation at source for recycling purposes | • No complaints from Rand water management and the school management regarding litter lying around the construction site and being blown across the School and Rand water<br>• Regular disposal of waste<br>• No complaints from surrounding | Ongoing throughout construction phase | ECO<br>ESO<br>Contractor |

| Development phase | Construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| | burying or dumping of any waste materials, litter or refuse shall be permitted<br>• Separate bins must be clearly marked and used for recycling of waste such as glass, plastic and tins where possible.<br>• All refuse bins must have lids that can be secured to prevent animals from gaining access.<br>• Sufficient containers must be strategically located around the construction site to handle the amount of litter, wastes, rubbish, debris, etc., generated by the construction site<br>• If skips are used, then they must be covered to prevent waste from wind blowing<br>• Skips and other waste containers must be Emptied regularly to registered waste landfill sites.<br>• Chemical containers and packaging brought onto the site must be removed for disposal at a suitable hazardous licenced landfill site. | | communities and landowners | | |

| Development phase | Construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| **Use of cement and concrete** | • The contractor must provide a method statement for cement and concrete batching. The method statement must provide information on proposed storage, washing and disposal of cement and concrete, packaging and tools.<br>• The mixing of cement and concrete must only be done at specifically selected sites on mortar boards or similar structures to contain run-off.<br>• Cleaning of cement and concrete mixing and handling equipment must be done using proper cleaning trays.<br>• All Empty containers must be stored in a dedicated area and later removed from the site for disposal at a licensed facility.<br>• All spillage that may occur must be investigated and immediate remedial action (removal of spillage and contaminated soil to registered landfill site) must be undertaken.<br>• Cement batching areas must be located in consultation with the ESO or ECO to ensure spillages are contained and that the proposed location does not fall within sensitive areas | • Minimise / avoid cement residue from entering into the environment<br>• Minimise / avoid pollution of soil, surface and groundwater resources | • No evidence of contaminated soil on the construction site<br>• Method statement in place and enforced | Daily monitoring | Contractor |

| Development phase | Construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| | | | | | |
| **Hazardous substances** | • If hazardous substances are to be stored or used on site, the Contractor shall submit a method statement detailing the substances / materials to be used, together with the transport, storage, handling and disposal procedures for the substances<br>• The transportation and handling of hazardous substances must comply with the provisions of the Hazardous Substances Act (Act No.187 of 1993) and associated regulations.<br>• The Contractor shall also comply with all other applicable regional and local legislation and regulations with regard to the transport, use and disposal of hazardous substances. Hazardous chemical substances are defined in the Regulations for Hazardous Chemical Substances). The relevant Material Safety Data Sheets (MSDS) shall be available onsite. Procedures in the MSDSs shall be followed in the event of an emergency.<br>• The Contractor shall be responsible for the training and education of all | • Minimise harm / damage to workers and to the environment through hazardous substances<br>• Ensure safety of workers handling such substances<br>• Safe transport of substances | • No spillage of hazardous substances<br>• No harm to workers | As and when required | ECO<br>ESO<br>Contractor |

| Development phase | Construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| | personnel on site who will be handling hazardous materials about their proper use, handling and disposal.<br>• Staff designated to handle hazardous waste must be supplied with the necessary safety items (gloves, dust masks, etc.) to ensure safety of workers. | | | | |
| **Workshop and equipment maintenance** | • Where practical, all maintenance of equipment and vehicles on site shall be performed in a workshop. If it is necessary to do maintenance outside of the workshop area, the Contractor shall obtain the approval of the ECO prior to commencing such activities.<br>• The Contractor shall ensure that there is no contamination of the soil or vegetation. The workshop shall have a smooth impermeable (concrete or thick plastic covered with sand) floor.<br>• The floor shall be bunded and sloped towards an oil trap or sump to contain any spillages.<br>• When servicing equipment, drip trays shall be used to collect the waste oil | • Ensure that environment is not damaged by leaking oil and/or fuel from vehicles | • No damage to the environment<br>• No complaints from Rand water management and the school management | Daily monitoring | ECO<br>ESO<br>Contractor<br>ER |

| Development phase | Construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| | and other lubricants. Drip trays shall also be provided in construction areas for stationary plant (such as compressors and vehicles).<br>• All vehicles and equipment must be kept in good working order. Leaking equipment must be repaired immediately or removed from site.<br>• The washing of equipment must be undertaken in the workshop or maintenance area, and these areas must be equipped with an impermeable floor and sump/oil trap.<br>• As part of the site layouts, a plan must be submitted to the ECO detailing the design of the bunding of the workshop and how run-off from the workshop will be managed as well as how drip trays used under plant will be managed. | | | | |
| **Eating areas for construction workers** | • The Contractor shall designate an eating area, subject to the approval of the ECO. No cooking is allowed outside this area<br>• The area shall be well demarcated and in a location approved by the ECO and shall not be within 20 m of any “no go” areas. | • Control potential influx of vermin and flies<br>• Neat work place<br>• Hygienic environment for workers | • No signs of vermin (e.g. rats) and flies<br>• No complaints from Rand water management and the school management and workforce | Daily monitoring | ECO<br>ESO<br>Contractor |

| Development phase | Construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| | • All workers must eat in designated eating areas. These areas shall have shade for the workers. The eating areas may be in existing structures or a temporary structure that shall be well constructed<br>• Sufficient bins shall be provided in the area. All disposable food packaging must be disposed of in the bins.<br>• The area must be cleaned after every meal.<br>• The feeding or leaving of food for animals must be strictly prohibited. | | | | |
| **Ablution facilities for construction workers: contamination of soil, surface and groundwater and environment** | • The contractor is responsible for providing all ablution facilities for his/her workers and those of any sub-contractors.<br>• Workers must be strictly forbidden to use the veld as a toilet.<br>• A minimum of one chemical toilet must be provided per 12 workers.<br>• Sanitary arrangements must be to the satisfaction of the ECO and OHS official<br>• Toilets must be of the chemical type. All toilets will be located within the construction site. | • Ensure proper on-site sanitation.<br>• Minimise potential of diseases on-site<br>• Minimise potential pollution of soil, water resources and natural habitat | • Worker use toilets provided and not veld<br>• No complaints received Rand water management and the school management and from workforce<br>• No visible signs of pollution of the environment (soils, water, veld) | Daily monitoring | Contractor ESO |

| Development phase | Construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| | • The contractor must keep the toilets in a clean, neat and hygienic condition. The contractor must supply toilet paper at all times.<br>• A reputable toilet-servicing company must be used to clean, maintain and service the toilets. The contractor must ensure that all toilets are cleaned and Emptied before any long weekends, workers' holidays, etc.<br>• Toilets must be secured to the ground and have a sufficient locking mechanism that are operational at all times. | • Frequent checks for leakages | | | |
| **Safety and security** | • The site and workforce must be managed in strict accordance with the OHS Act and the National Building Regulations as well as with Eskom's Safety, Health, Environment and Quality Policy (32-727).<br>• The contractor must ensure that all emergency procedures are in place prior to commencing work. Emergency procedures must include: fire, spills contamination of the ground, accidents to Employees, use of hazardous substances and materials, etc. | • Reducing risk of incidents that could lead to fatalities or serious injury<br>• No complaints from inside and outside construction area | • No incidents reported during construction phase<br>• No complaints from the health and safety officer<br>• No complaints from surrounding communities and landowners regarding illegal squatting or dangerous driving by those driving construction vehicles | Daily monitoring | Applicant/ CE/ PM<br>ECO |

| Development phase | Construction | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| | • The contractor must ensure that lists of all emergency telephone numbers / contact persons are kept up to date and that all numbers and names are posted at relevant locations throughout the construction site.<br>• The nearest emergency centre must be identified during all phases of the project. The contact details of this centre, as well as the police and ambulance services, must be available at prominent locations around the construction site.<br>• A Health and Safety Officer as well as an independent firm must be appointed to audit the site's compliance with the OHS Act during construction.<br>• Ensure a grievances procedure is in place for local people to log complaints regarding misbehaviour of construction workers<br>• Monitor the surrounding area for illegal squatting and develop a strategy to deal with illegal squatting that may occur as a result of people coming to the site looking for work | | | | |

| Development phase | Operational | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| **Construction site decommissioning** | • All structures comprising the site office (if any) are to be removed from site.<br>• The area that previously housed the site office is to be checked for spills such as oil, concrete, etc., and these shall be cleaned up and removed.<br>• All surfaces hardened during construction are to be ripped and imported material thereon removed.<br>• All rubble is to be removed from the site to an approved disposal site.<br>• Fences, barriers and demarcations are to be removed unless otherwise stipulated by the Engineer or Contractor<br>• All residual stockpiles must be removed as directed by the Engineer.<br>• All residual building materials must be removed from the site | • Ensure site is restored to original condition<br>• Ensure that remains of construction activity are disposed of correctly | • No complaints from Randwater Board management for Zwartkopies construction activities<br>• No complaints from school management for the Queens substation construction activities | • Once off after construction is completed | Contractor<br>Engineer<br>ECO |
| **Rehabilitation of vegetation** | • Topsoil removed during the construction phase must be used where possible to rehabilitate disturbed areas;<br>• Topsoil must be analysed for its fertility and if reduced, appropriate | • Minimise exposed areas<br>• Appropriate plants are used for re-vegetating | • Exposed areas are rehabilitated quickly to reduce loss of soil | Monthly until vegetation has established; yearly thereafter | Contractor<br>Applicant |

| Development phase | Operational | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| | fertilisers must be used to increase the fertility of the soil prior to rehabilitation.<br>• Re-vegetate the area with plant species consistent surrounding environment and under guidance of a qualified ecologist.<br>• Methods and timing of rehabilitation must be prescribed by an ecologist based on site conditions at the time<br>• Badly damaged areas should be fenced off to allow the area to rehabilitate.<br>• Remove invasive vegetation from damaged construction area and from rehabilitated areas<br>• Manual labour to be used to remove alien plant species instead of chemical removal | • Reduce risk of spread of invasive species | • Area is rehabilitated to surrounding area standard<br>• No signs of invasive species on rehabilitated areas | | |
| **Erosion** | • Reshape soil surface to flat as soon as possible and stabilise it.<br>• Eroded areas to be re-vegetated immediately with appropriate fast growing vegetation<br>• If necessary, erosion barriers (such as straw bales or fibre netting) should | • Avoid permanent scarring of surrounding area<br>• Ensure that rain water coming off existing buildings does not lead to | • No visible signs of erosion around the substations | Every month until eroded areas are stabilised; thereafter as and when required | Contractor<br>Applicant |

| Development phase | Operational | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| | be installed until eroded areas are rehabilitated | erosion of surrounding areas | | | |
| **Noise** | • Applicant must ensure that noise levels are kept as low as is possible | • Ensuring that substations and powerlines activities have limited impacts | • No complaints from surrounding communities and landowners | Ongoing | Applicant |
| **Use of hazardous substances** | • The transportation and handling of hazardous substances must comply with the provisions of the Hazardous Substances Act (Act No.187 of 1993) and associated regulations as well as SABS 0228 and SABS 0229.<br>• The applicant shall comply with all other applicable regional and local legislation and regulations with regard to the transport, use and disposal of hazardous substances. Hazardous chemical substances used during operation shall be stored in secondary containers and the relevant MSDS shall be available on site. Procedures detailed in the MSDSs shall be followed in the event of an emergency situation. | • Minimising risk to workers and environment through correct handling of such substances | • No accidents or spillages | Daily | Applicant |

| Development phase | Operational | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| | • The applicant is responsible for the training and education of all personnel on site who will be handling hazardous materials about their proper use, handling and disposal. | | | | |
| **Safety and security** | • Emergency procedures, including the names and contact details of responsible personnel and emergency services shall be made available to all staff and shall be clearly displayed at relevant locations at the site.<br>• Staff will be trained what to do in the case of emergencies<br>• Telephone numbers of emergency services shall also be posted conspicuously in the office(s) near the telephone. | • Reduce risk of incidences that could lead to fatalities or serious injury | • No incidences reported during construction phase | As and when required | Applicant |

| Development phase | De-Commissioning | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| **Loss of vegetation and seed banks due to oil and diesel spillages** | • Ensure that measures are in place to contain any oil and diesel leakages or spills. Proper handling and storage practices, as well as readily available oil-spill kits should minimise the risks associated with such spills.<br>• Spills should be cleaned up immediately by removing the spills together with the polluted soil and disposing thereof at a registered facility.<br>• Suitable covered containers should be provided and conveniently placed for waste disposal. All used oils, grease or hydraulic fluid should be placed therein and these containers should be removed from the site to a registered facility | • Minimise disturbance and pollution of the environment during dismantling of site facilities. | • No visible spills once substations and powerlines are dismantled<br>• | Daily during dismantling | Applicant Contractor |
| **Shaping, top soil infilling and seeding of disturbed area** | • Re-vegetate the area with plant species consistent with the post construction land use and with indigenous species | • Effective rehabilitation of footprint of construction areas | • Visible signs of footprint are reduced | Immediately after dismantling has occurred; monthly checks thereafter to ensure that vegetation has taken | Applicant Contractor |
| **Dust** | • Area to be watered regularly to reduce dust levels | • Minimise nuisance factor | • No complaints from surrounding | Daily | Applicant Contractor |

| Development phase | De-Commissioning | | | | |
|---|---|---|---|---|---|
| **Impacts / Issues** | **Mitigation measures** | **Management objectives** | **Management targets** | **Frequency** | **Responsible party** |
| | • Fence off area with shade cloth to reduce spread of dust<br>• Working crews to wear dust masks when necessary | during dismantling process | communities and landowners | | |
| **Noise** | • Dismantling to take place during weekdays between 7h00 and 17h00. Weekend work can only take place if surrounding landowners and communities have been informed timeously | • Reduce nuisance factor of dismantling process | • No complaints from surrounding communities and landowners | Daily | Applicant Contractor |

## 9. 9 IMPLEMENTATION SCHEDULE

This section presents an implementation schedule of the EMPr as depicted in the table below

**Table 3: Implementation Schedule**

| Activity | Responsibility | Frequency | Deliverable |
|---|---|---|---|
| Legislation administration & Implementation | ECO, ESO Resident Engineer/Site Manager | Throughout Project life cycle | Legal Register |
| Health & Safety Inspections | Contractor Health & Safety Officer, Resident Engineer/Site Manager | Daily Throughout Project life cycle | SOPs, Checklists, Method Statements, Incident Reports, Accident Reports, SHE statistics, NC Reports |
| Environmental Monitoring | Appointed ECO | Daily Throughout Project life cycle | Weekly and Monthly Reports, Incident Reports, Checklists, Method Statements |
| Environmental Auditing | Appointed ECO | Bi-Monthly for the duration of the Project | Audit Report, Corrective Action Plan, Checklists |
| Review of the EMPr | ESO, ECO, Contractor | When necessary | Reviewed EMPr |

## 10. TRAINING, AWARENESS AND CAPACITY BUILDING

All new Employees and contractors will attend an induction session/s that will include health and safety, environmental and community awareness and emergency response procedures. The project proponent will use written (newsletter/posters/toolbox talks) and verbal (as part of routine briefings) communication methods to raise awareness on a range of health, safety and environmental issues. This will be done in relevant languages and English language (as appropriate) to ensure that all members of the workforce are made aware. Training for construction workers will include HIV/Aids counselling and awareness.

It is very important to take cognizance of the following if long term success has to be achieved:

- The EMPR will be implemented in a community that has extensive local knowledge that has to be integrated into the capacity building program. The capacity building plan should thus aim to develop skills, capitalize on the knowledge and values inherent within the community to develop skills, and promote behaviour that supports environmental sustainability.
- There are international, regional, national, provincial and local guiding principles and approaches, some of which are law that have to be adopted to formulate the program to ensure that it can hold its own.
- Environmental management capacity building regardless of the target audience should always take into consideration the interaction between the physical, social, economic and political dimensions of the environment, as all have an impact on the outcomes of the sustainability and equitability of environmental management choices.
- The interaction between the four major dimensions of the environment should be addressed in an equitable manner to ensure that all stakeholders understand and carry out their responsibilities.

## 11. DOCUMENTATION & RECORD KEEPING

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 Contract Manager/Site Supervisor shall keep abreast of all works to ensure no problems arise.

## 12. PLAN MONITORING

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 programme. 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.

During the construction phase of the Project, the Contractor's Environmental Officer must report all environmental impacts (e.g. large scale sedimentation and erosion, damage to and/or destruction of, natural vegetation and damage to wetland on site) as well as accidents and incidents to the Owner's Representative. These reported impacts and incidents will be captured on a database to ascertain trends and track progress in the implementation of preventative and corrective actions, and benchmarking against other, similar operations.

Depending on the level of severity, accidents and incidents during construction or maintenance will be investigated by the Contractor's Environmental officer division, with key input from the line management to ensure accountability.

## 13. RESPONDING TO NON COMPLIANCES

### 14.1 Notification of Non Compliance

- The contractors shall act immediately when notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the construction site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The ECO should be made aware of any complaints.
- Any non-compliance with the agreed procedures of the EMPr is a transgression of the various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause shall be reported to the relevant authority for them to deal with the transgression, as it deems fit.
- The Contractor is deemed not to have complied with the EMPr if, inter alia:
- There is evidence of contravention of the EMPr specifications within the boundaries of the construction site, site extensions and roads;
- There is contravention of the EMPr specifications which relate to activities outside the boundaries of the construction site.
- Environmental damage ensues due to negligence;
- Construction activities take place outside the defined boundaries of the site; and/or
- The Contractor fails to comply with corrective or other instructions issued by the Engineer within a specific time period.

### 14.2 Fines and penalties

Where environmental damage is caused or a pollution incident, and/or failure to comply with any of the environmental specifications contained in the EMPr, the developer and/or contractor shall be liable.

The following violations, and any others determined during the course of work, should be penalised:

- Hazardous chemical/oil spill and/or dumping in non-approved sites.
- Damage to sensitive environments on site (wetlands and protected species)
- Unauthorized removal/damage to indigenous trees and other vegetation, particularly in identified sensitive areas.
- Uncontrolled/unmanaged erosion.
- Unauthorised blasting activities (if applicable).
- Pollution of water sources.
- Unnecessary removal or damage to trees. (especially protected species)

## 14. ENVIRONMENTAL CONTACT PERSONS

This section is to be filled after appointment of various responsible officials to implement this EMPr

**Table 4: Contact Officials & Details**

| Name | Organisation | Designation | Email Address | Cell Number | Tell |
|---|---|---|---|---|---|
| | Eskom | | | | |
| | | Contractor | | | |
| | | ECO | | | |
| | DEA | Competent Authority | | | |
| | | OHS | | | |

## 15. CONCLUSION

Although all foreseeable actions and potential mitigations or management actions are contained in this document, the EMPr should be seen as a day-to-day management document. The EMPr thus sets out the environmental standards that are required to minimise the negative impacts and maximise the positive benefits of the proposed substations and powerlines.

Further guidance should also be taken for any conditions contained in the Environmental Authorisation, if the project is granted approval, and that these DEA conditions must be incorporated into the final EMPr. All contractors should be made to have this EMPr available, as part of any tender documentation, so that the engineers and contractors are made aware of the potential cost and timing implications needed to fulfil the implementation of the EMPr, thus adequately costing for these.