ESKOM QUNU SUBSTATION

ENVIRONMENTAL MANAGEMENT PROGRAMME

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GLOSSARY OF TERMS

The definitions contained within this section are for the benefit of this document for explanatory purposes only.

Applicant: Eskom Holdings (Pty) Ltd

DEA: Department of Environmental Affairs (National)

DEDEA: Department of Economic development and Environmental Affairs (Eastern Cape, Amathole District)

DWA: Department of Water Affairs

Endemic species: Endemic species are those confined to a particular geographic region (e.g. The Cape Floral Kingdom). In this context Eastern Cape endemics are defined as those species having their range restricted to the Eastern Cape, as defined in the literature.

Environment: Environment means the surroundings within which humans exist and that could be made up of:
the land, water and atmosphere of the earth;
micro-organisms, plant and animal life;
any part or combination of (i) and (ii) and the interrelationships among and between them; and
the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Environmental Aspect: An environmental aspect is any component of an Applicant's operations activity that is likely to interact with the environment, and cause harm to it.

Environmental Authorisation: a written statement from DEA that records its approval of a planned undertaking of the activity and the mitigating measures required to prevent or reduce the effects of environmental impacts during the life of the development. Conditions included in the Authorisation must be adhered to at all times during operation.

Environmental Impact: An impact or environmental impact is the change to the environment, whether desirable or undesirable, that will result from the effect of an Activity between the limits that define the site. An impact may be the direct or indirect consequence of an operational Activity.

Environmental Management Programme (EMPr): A detailed plan of action prepared to ensure that recommendations for enhancing positive impacts and/or limiting or preventing negative environmental impacts are implemented during the life-cycle of a project.

Gantry: A fixed structure providing access to the top of a transport vehicle for loading or discharging operations.

IEM: Integrated Environmental Management

Independent Environmental Consultant: A suitably qualified and experienced Independent Environmental Consultant (IEC) appointed by the Applicant to perform the obligations specified in the Contract. The IEC shall provide reports to the Applicant and to DEA where non-compliance actions are unacceptable.

Interested and Affected Parties (I&APs): Interested and/or affected in terms of the regulations published in Government Notice No. R. 543 of the National Environmental Management Act (Act No. 107 of 1998) Regulations of 2010.

NEMA: National Environmental Management Act, 1998 (Act No. 107 of 1998)

NWA: National Water Act, 1998 (Act No. 36 of 1998)

SAHRA: South African Heritage Resources Agency

Search and Rescue: The location and removal of specified plant species, without unnecessary damage, and their transfer to a specified location.

Species of Special Concern: Those species listed in the Endangered, Threatened, Rare, Indeterminate, or Monitoring categories of the South African Red Data Books, and/or species listed in Globally Near Threatened, Nationally Threatened or Nationally Near Threatened categories (Barnes, 1998).

Sustainable development: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of "needs", in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs (Brundtland Commission, 1987).

1 BUSINESS CASE FOR SOUND ENVIRONMENTAL MANAGEMENT

1.1 Introduction

The following provides a summary of some of the business reasons for effectively managing environmental issues. These issues are relevant regardless of the scope or nature of a project and are universally applicable:

Improve Environmental Performance
Some managers act on environmental management only when they reach the crisis stage. Their energy is consumed by reacting rather than preparing for the future. But proactive planning with an Environmental Management Programme (EMPr) means fewer surprises. It prevents problems from going unnoticed, and helps an organisation get to the root causes that create problems in the first place. By looking at all aspects of performance, a company can find improvement opportunities that might otherwise go unnoticed.

Save money in the long-term
By providing a more systematic approach to environmental management, an EMPr can reveal many opportunities for improving efficiency. This can help you cut waste, prevent pollution, conserve resources, and save money.

Boost the company's Public Image
Improving environmental performance can be just as important externally. The growing awareness surrounding climate change and our social responsibility has lead to consumers supporting companies who share the same ideals as them. As more information is made available over the Internet, citizens can go online and find out about toxic emissions, compliance with environmental standards, and more. An EMPr provides the structure to measure how well your environmental management program is working. By measuring progress against goals, and proactively reporting the results, you can help build public trust and credibility.

Better Manage Your Environmental Legal Obligations
Perhaps most importantly an EMPr provides the structure to ensure that the organisation identifies and meets all environmental legal requirements. In the short term, this helps you avoid violations and all the repercussions they can bring. Longer term, an EMPr can help you make important decisions about the timing and size of investments needed to comply with future regulations.

1.2 Form and Function of an EMPr

An EMPr is focused on sound environmental management practices, which will be undertaken to minimise adverse impacts on the environment through normal operation of the facility. The adverse impacts have been identified in the Basic assessment Report (BAR) and it is therefore important that the two documents (BAR and this EMPr) be read in conjunction. In addition, an EMPr identifies what measures will be in place or which will be actioned to manage any incidents and emergencies that may occur during operation of the facility.

As such the EMPr provides specifications that the Applicant must adhere to, to minimise adverse environmental impacts associated with the operations of the substation and turn-in line. The Applicant to which authorisation is granted, is ultimately responsible for overall environmental performance.

The guidelines for the execution of the EMPr include the following (Source-Western Cape EIA guidelines for Environmental Management Plans):

- **Responsibilities** for the environmental performance of the proposed activity are communicated to the staff;
- **Communications** channels to report on environmental performance, problems and priorities are in place;
- An **Aspects and Impacts register** is established to identify potential and significant negative and positive environmental impacts associated with the activities of the proposed development;
- **Mitigation** measures are implemented to avoid or minimise and manage the identified negative environmental impacts as well as to enhance the positive impact on the environment (e.g. employment; support of conservation efforts); and
- **Monitoring** programme or schedule is developed to track the plans that have been implemented so as to ensure the effectiveness of the plan.

The following diagram presents the form and function of an EMPr:

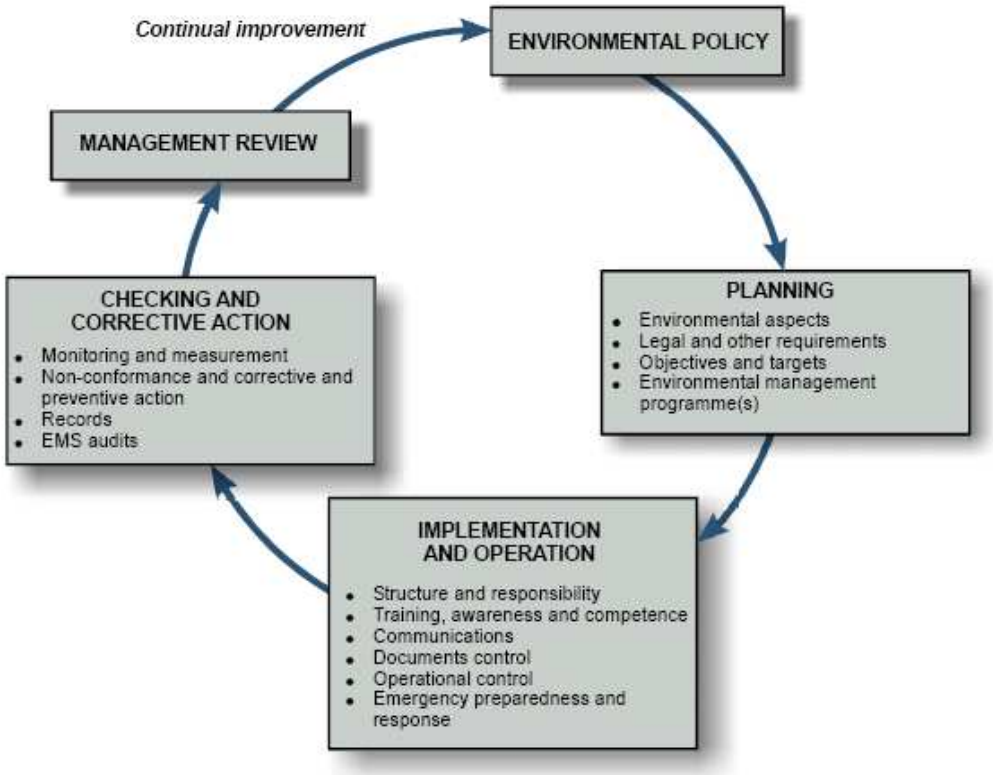

Figure 1: The approach to an EMPr

2 RELEVANT LEGISLATION

Legislation and policies reflect societal norms and values. The legislative and policy context therefore plays a critical role in identifying and assessing potential social, environmental and economic impacts associated with a proposed development. In this regard a key component of the current legislative and policy assessment process is to assess the proposed development in terms of its alignment with key environmental legislation and policy documents.

National Legislation and Bills

- The South African Constitution;
- National Environmental Management Act (107 of 1998 as amended in 2010);
- National Environmental Management: Biodiversity Act (10 of 2004);
- National Environmental Management: Waste Management Act (59 of 2008);
- National Heritage Resources Act (25 of 1999);
- National Water Act (36 of 1998);
- Municipal Systems Act (32 of 2000);
- Development Facilitation Act (67 of 1995); and
- Conservation of Agricultural Resources Act (43 of 1983).

National Policies

- National Framework for Sustainable Development (2006); and
- National Biodiversity Strategy and Action Plan (2005).

Provincial Policies and Guidelines

- Eastern Cape Environmental Implementation Plan (2003).

3 PROPOSED QUNU SUBSTATION

3.1 Introduction

The project will include the following activities:

- Qunu 132/22kV Substation Extension - the extension will be inside the substation and diversion of the 132kV line;
    - Install a 2nd 132/22kV 20MVA transformer, 2x132kV feeder bays, and 22kV bus section breaker and a fourth 22kV feeder bay;
    - Extend the 2x132kV busbars to form a full 132kV double busbar arrangement and install a 132kV bus coupler;
    - Add the necessary breakers on the existing transformer;
    - Loop in and out of the existing Tyalara/Zimbane 132kV line and build approximately 500m of 132kV Chicadee line; and
    - Label the Qunu/Tyalara section of the 132kV line as QUN-TYA-(1-n). Label the Vuyani/Qunu 132kV line as QUN-VUY-(1-n). This project should be aligned with Vuyani MTS (Mthatha).
- Tyalara Substation – Qunu 132kV Feeder Protection Upgrade;
    - Install the necessary scheme and protection based on the changes done to the substation;
- Qunu Substation 22kV Link Lines and upgrading of the existing 22kV line;

The site is located in Qunu in the King Sabata Dalindlandyebo Local Municipality in the O.R. Tambo District Municipality, in the Eastern Cape Province, South Africa. Qunu substation is situated approximately 30km south of Umtata along the N2. Refer to Figure 2, 3 and 4 below.

Figure 2: Regional locality of the site- OR Tambo District Municipality

Figure 3: Aerial view of the existing substation (indicated with red)

3.2 Purpose and Structure of the EMPr

The EMPr will provide details of the project components and activities outlined in the Basic Assessment Report, the roles and responsibilities of all parties with respect to Environmental Management during construction, and Environmental Specification that must be adhered to on site.

3.3 Implementation

The EMPr provides specifications that the Contractors shall adhere to, in order to minimise adverse environmental impacts and optimise opportunities associated with construction activities.

The EMPr shall form the Environmental Particular Specification as part of the tender specifications issued to prospective contractors, so that the Contractor is aware of their environmental responsibilities and the associated costs during construction activities. Prospective contractors shall incorporate the requirements of the EMPr into their submissions/ tenders.

In the event of discrepancy with part or parts of the standard specifications or project specifications, this section shall take precedence.

The following standards must be taken into account:

Information on currently valid national and international standards may be obtained from the Information Centre at Megawatt Park and Technology Standardization Department.

- ESKADABD1:Rev.1, Environmental management systems;
- ESKASAAL0:Rev.0, The safe use of pesticides and herbicides;
- SCSASAAZ9: Rev.0, Clearing and maintenance of servitude routes;
- ESKPBAAD4:Rev.0, Herbicide Management;
- ESKPVAAZ1:Rev.2, Environmental management programme (EMPr) procedure;
- CO/P 015:Rev.0, Servitude corridor bush clearing and maintenance procedure;
- CD/P 070, Pruning and cutting of trees near energised power lines; and
- OPR 6204:Rev.0, Operating regulations for high-voltage systems (ORHVS).

4 DETAILS OF THE ENVIRONMENTAL PRACTITIONER THAT PREPARED THE EMPR

This chapter is intended to provide details on the organisation and the authors that undertook the Environmental Management Programme.

4.1 ARCUS GIBB (PTY) LTD.

Arcus GIBB has an in-house Environmental Services Division comprising 28 professional staff. Arcus GIBB has experience in the full spectrum of environmental services. With particular reference to this project, our environmental planning and management services includes a range of activities:

- Environmental advisory services;
- Environmental impact assessments (EIAs) ;
- Environmental management programmes (EMPrs) ;
- Strategic environmental assessments (SEAs);
- Environmental management frameworks (EMFs) ;
- Environmental management systems (EMSs);
- Environmental training;
- Environmental monitoring and auditing;
- Integrated development planning (IDP);
- Public participation;
- Specialist ecological, botanical and rehabilitation assessments;
- Environmental permit and regulatory compliance management planning; and
- Waste management services.

Arcus GIBB has undertaken a broad range of high-profile Environmental Impact Assessment projects nation-wide and within neighbouring countries. Significant linear and site specific projects undertaken recently by Arcus GIBB include:

- Environmental Impact Assessment (EIA) and Environmental Management Programme (EMPr) for a conventional nuclear power station and associated infrastructure in the Western Cape;
- EIA and EMPr for the Pebble Bed Modular Reactor;
- EIA and Public Involvement Process (PIP) for four 765 kV Hydra (De Aar) – Perseus (Dealesville) 260 km transmission power lines, Free State and Northern Cape Provinces and a 765 kV 12km transmission power line and associated infrastructure;
- EIA, and EMPr for the second and third new runways as well as associated infrastructure (including roads) at the Cape Town International Airport;
- EIA for the proposed George Western Bypass Road, Western Cape Provincial Administration;
- EIA for the rail line from Aloes to Port Ngqura; and
- EIA Specialist Report for the proposed chlor-alkali plant within the Coega Industrial Development Zone, Straits Chemicals.

Significant ESKOM related EIA work undertaken by ARCUS GIBB as the Environmental Assessment Practitioners in the Eastern Cape include:

- Environmental Scoping Study for the Proposed Dumasi – Zimbane 132 kV Overhead Powerline;
- Environmental Scoping Study for the proposed Re-routing and Upgrading of the Existing 33 kV Overhead Powerline in Hogsback;
- Environmental Scoping Study for the proposed Construction of a new 11kV Overhead Powerline and Upgrading existing 11 kV Line in Kubusie, Keiskammahoek;
- Environmental Scoping Study for the Proposed 132/22 kV Siphaqeni Substation;
- Environmental Scoping Study for the Proposed Construction of the Haven/Cwebe/NPA 22kV Overhead Powerline;
- Environmental Scoping Study for the proposed 22kV Overhead Powerline at Mzonyane, Ngqeleni, Eastern Cape; and
- Environmental Scoping Study for the proposed Qumbu-Ugie 132 kV Powerline and Associated infrastructure.

4.1.1 Details of EAP that Prepared the Environmental Management Plan

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4.1.2 Expertise of the EAP's to carry out EMPr Procedures

Expertise of the Project Reviewer

Ms Pat Jennings (N.H.Dip. Nature Conservation) is an Environmentalist with 20 years experience in EIA regulation and conservation research support with provincial authorities in KwaZulu-Natal and the Eastern Cape. Pat Jennings was previously based at the Dundee and Empangeni offices of the KZN Dept of Agriculture and Environmental Affairs, and at the Port Elizabeth office of the Eastern Cape Department of Economic Affairs, Environment and Tourism. Her key expertise includes: Review of Environmental Impact Assessments and related reports, compilation and quality control of records of decision for environmental authorisations, and development of operational guidelines, procedures and templates for administration of environmental applications.

Please refer to **Appendix A** for a detailed CV.

5 ROLES AND RESPONSIBILITIES OF PARTIES WITH REGARD TO THE ENVIRONMENTAL MANAGEMENT PROGRAMME

5.1 ESKOM

ESKOM has ultimate responsibility to ensure the protection of the environment during the construction and operation of the required works. ESKOM will be responsible for:

- Being familiar with the contents of the EMPr;
- Making sufficient budget available for implementation of the EMPr including a provisional sum for additional environmental protection measures that may be necessary as construction and rehabilitation proceeds;
- Providing the resources for an Environmental Control Officer to monitor the implementation of the EMPr for the project;
- Supporting the Engineer in enforcing the Environmental Specifications; and
- Communicating with all role players in the interests of a co-coordinated effort to protect the environment.

5.2 Environmental Practitioner

The Environmental Practitioner (EP) will oversee the implementation of the EMPr. The EP will have the following responsibilities:

- To ensure that a copy of the environmental authorization is distributed to all interested and affected parties on receipt;
- To finalise the EMP in accordance with the conditions as stipulated by the environmental authorities in the environmental authorization;
- To advise the ESKOM Environmental Control Officer on the interpretation and enforcement of the Environmental Specifications;
- To supply environmental information as necessary;
- To demarcate particular sensitive areas and pass instructions through the ESKOM Environmental Control Officer concerning works in these areas; and

5.3 Environmental Control Officer

An Environmental Control Officer (ECO) must be appointed to oversee the implementation of the project and perform the role of an ECO. The ECO is required to:

- Be familiar with the contents of the EMPr;
- Monitor the Contractor's compliance with the Environmental Specifications on a regular basis and enforce compliance;

- Communicate to the Contractor the advice of the EP and the contents of the EP reports and issue site instructions giving effect to the EP requirements where applicable;
- Where no specific item is provided in the Schedule of Quantities for the actions recommended by the EP, costing of measures should be undertaken before issuing site instructions;
- Communicate to the EP, at least 10 working days in advance, any proposed actions, which may have negative impacts on the environment;
- Designate all working areas;
- Communicate to the EP any infringements of the Environmental Specifications and accompany the EP during site inspections;
- Discuss with the EP and Project Manager the application of any penalties and other possible enforcement measures when necessary;
- Maintain a record of complaints from the public and communicate these to the Project Manager and EP;
- Facilitate communication between all role-players in the interest of effective Environmental Management;
- Monitor the compliance of the Contractor through the EP reports;
- Allow for environmental protection works within the project budget;
- Determine the imposition of penalties for the infringement of the Environmental Specifications; and
- To supervise the contractor on implementation of the specifications of the EMPr. A monthly audit should be undertaken and the audit reports should be distributed to ESKOM (Project Engineer and Environmental Management Department), DEA, and the relevant local municipal environmental planning department.

5.4 The Contractor & Sub-Contractors

The Contractor has the responsibility to:

- Comply with the Environmental Specifications contained in this document;
- Be familiar with the EMPr and the Environmental Authorisation;
- Be familiar with any No-Go areas and associated restrictions;
- Notify the Environmental Control Officer and PE immediately in the event of any accidental infringements of the Environmental Specifications to enable appropriate remedial action to be taken;
- Ensure environmental awareness among his employees and sub-contractors so that they are fully aware of, and understand the Environmental Specifications and the need for them;
- Undertake rehabilitation of all areas affected by construction activities to restore them to their original states, as determined by the ECO; and
- Undertake the required works within the designated working areas.

5.5 The Project Engineer

The Project Engineer (PE) is required to:

- Be familiar with the contents of the EMPr;
- Ensure that a copy of the EMPr is included in the respective contractor tender documentation such that the financial implications of its implementation can be budgeted for;
- Where no specific item is provided in the Schedule of Quantities for the actions recommended by the ECO, costing of measures should be undertaken before issuing site instructions;
- Communicate to the Contractor the advice of the ECO and the contents of the inspection reports and issue site instructions giving effect to the environmental requirements where applicable;
- Allow for environmental protection works within the project budget; and
- Determine the imposition of penalties for the infringement of the Environmental Specifications.

5.6 Communication between Parties

The importance of open communication between all parties mentioned above is emphasised, as the attainment of environmental quality requires a joint effort. With open communication the role of Environmental Management should be a positive one - aimed at being proactive in preventing problems - rather than a negative "policing" role when negative impacts have already occurred.

6 PROJECT PHASES

6.1 Planning and Design Phase

The Planning and Design Phase involves all preconstruction activities. This includes land negotiations, survey and mapping and design of the infrastructure. The Planning and Design Phase falls within the sole responsibility of ESKOM.

The following mitigation measures must be considered/ implemented in this phase:

6.1.1 Design of Structures

Perching brackets are to be fitted to all structures to prevent bird electrocutions.

6.1.2 Surveyors and Field Work

All field staff involved in the Planning and Design Phase should make use of existing access roads where practical.

6.1.3 Additional Authorisations

Additional statutory approvals and authorisations may be necessary in order to commence construction of the project. It is ESKOM's responsibility to ensure that all such approvals are in place prior to construction commencing.

6.2 Construction Phase

The Construction Phase commences following the appointment of a contractor, the contractor will establish themselves at a site camp in an appropriate location to the proposed works to build the required infrastructure.

Most of the impacts associated with the substation upgrade occur during this phase of the project. For this reason **Environmental Specifications have been prepared (Section 7)** which the contractor must implement.

ESKOM must ensure that these Environmental Specifications are included in tender documentation such that aspects for environmental management are budgeted for and that contractors are fully aware of their obligations with regards to environmental management on site.

Environmental Surveillance
For the purposes of implementing the conditions contained herein, an ECO must be appointed who must be the responsible person for ensuring that the provisions of the EMPr are complied with during the life of the project. The ECO must submit written reports to the Applicant and relevant authority after visiting the site.

Record keeping
The ECO will monitor the Applicant's adherence to the approved impact prevention procedures and must issue the Applicant a notice of non-compliance whenever transgressions are observed. The ECO should document the nature and magnitude

of the non-conformance in a designated register, the action taken to discontinue the non-conformance, the action taken to mitigate its effects and the results of the actions. The non-conformances must be documented and reported in the monthly report. These reports should be made available to the DEA in accordance with the conditions of the environmental authorisation.

Copies of all permits and EMPr's must be kept on site and made available for inspection by visiting officials from the employer or relevant environmental departments.

6.3 Operation or Maintenance Phase

Once built and commissioned, periodic maintenance will be undertaken repairing faults, and broken infrastructure.

During this phase it is essential that all maintenance personnel undertake general best practice environmental management:

This includes:

- Keeping to existing access roads and no "open bush" driving;
- No littering or disturbance to surface water features; and
- Closing gates and general respect for property.

7 PROJECT ENVIRONMENTAL SPECIFICATIONS

The Contract shall be conducted in accordance with the principles of Integrated Environmental Management (IEM) "in an environmentally and socially responsible manner" (DEAT 1992). The Project Environmental Specifications detail the controls and procedures necessary to achieve this goal.

The Contractor will be required to comply with the Project Environmental Specifications contained in this section. Should any conflict arise between other specifications and the Project Environmental Specifications, the Project Environmental Specification shall prevail.

The Contractor shall plan his work in such a way that compliance with the Project Environmental Specifications is facilitated timeously.

Demarcation of the limits of all working areas shall be carried out according to specification, before the Contractor shall be permitted to undertake any excavation or construction on site.

7.1.1 Working Areas

- Sites should be divided into working areas and “no-go” areas.
- **Working areas** are those areas required by the Contractor to construct the works and approved by the PE. If necessary, the working areas may be demarcated during the construction period. The Contractor will not be permitted beyond the designated working areas
- “**No-go**” areas are those areas outside of working areas. These include watercourses and indigenous vegetation.
- Construction activities may be undertaken only in designated working areas to minimise the impact on the natural environment and facilitate control of the works.

At a minimum, the following working areas are to be clearly defined and demarcated:

- Construction Camps;
- Stockpile Areas;
- Areas where significant bush clearing is required; and
- Any new access tracks.

7.1.2 Conservation and Stockpiling of Topsoil

Topsoil shall be excavated from the following areas no longer than five days before the start of construction:

- All areas to be excavated;
- Areas to be occupied by roads, including temporary roads;
- Areas for the storage of fuels;

- Areas to be used for batching / mixing of concrete; and
- Areas for stockpiling of construction materials.

Conditions for excavating topsoil:

- Topsoil shall be excavated to the base of the A-Horizon or approximately 150-mm, whichever is deeper, and stockpiled for later use in the area designated by the PE.
- Topsoil should be stored in piles not exceeding 1 m in height.
- Stockpiled topsoil is valuable for its humus and seed content and shall be used for rehabilitation purposes.
- Grass should not be removed prior to stripping of the topsoil.
- Topsoil should not be mixed with any other material (construction rubble, subsoil's etc)
- Erosion of the topsoil stockpiles should be prevented.
- Weeds appearing on stockpiled topsoil must be removed by hand before they reach seeding stage.
- Soil contaminated by hazardous substances must be disposed of in a formal disposal site, according to DEA requirements.

7.1.3 General Erosion Control

- No erosion will be tolerated on the site.
- Areas particularly susceptible to erosion are: areas stripped of topsoil, soil stockpiles and steep slopes (gradients > 6 %).
- The Contractor must implement erosion prevention measures to the satisfaction of the Project Engineer, for erosion which may result from construction or changes to the flow of storm water or river flow caused by operations and activities.
- Where evidence of erosion appears, anti-erosion measures such as the construction of contour berms, cut-off drains or planting of grass sods may be necessary.
- Areas affected by construction related activities must be monitored weekly (by the Contractor) for evidence of erosion.
- Where soil erosion does occur the Contractor shall reinstate such areas and areas damaged by the erosion, at his own cost and to the satisfaction of the Engineer and ECO.

7.1.4 Prevention of Pollution

The Contractor must ensure that pollution of the ground or water does not occur as a result of any activities on site. Such pollution may result from the release (accidental or otherwise) of chemicals, oils, fuels, sewage, wastewater, solid waste and litter, etc.

The following mitigation measures are to be undertaken in order to reduce pollution:

- The contractor shall ensure that the working area is kept clean and presentable at all times and in doing so, minimize the negative visual impacts of construction.
- All litter or Contractors' waste must be contained in the appropriate bins.
- The Contractor and shall be responsible for provision of the appropriate bins and for the disposal of refuse and waste generated by his staff on a daily basis.
- All Waste shall be removed to an approved waste disposal facility. No burning or burying of waste shall be permitted on site.
- All concrete waste shall be removed to an approved landfill site and no cement-laden water shall be discharged into any water course.
- Waste water from batching operations or ready mix trucks shall be discharged into a geo-textile lined pit dug for this purpose and the cement residue removed from site at a later stage.
- Minimum quantities of fuel, paints and other hazardous material should be kept at the construction site
- Drip trays shall be utilised to prevent oil or fuel spills in case of on-site emergency maintenance;
- Safeguarding of hazardous substances must be ensured to prevent chemicals from being stolen, vandalised, catching fire or spilling on open ground.

7.1.5 Dust Control

Dust is regarded as a nuisance when it reduces visibility, soils private property and is aesthetically displeasing. Dust reduces the palatability of grazing grasses and may retard plant growth.

- The Contractor shall be responsible for the control of dust arising from his operations and activities.
- Control measures could include regular spraying of working / bare areas with water, at an application rate that will not result in soil erosion.

7.1.6 Noise Control

- The Contractor should take reasonable measures to limit noise levels during construction.
- The Contractor should familiarise himself with the legislation pertinent to noise generation.

7.1.7 Fire Prevention and Control

- The Contractor shall take all the necessary precautions to ensure that fires are not started as a result of his activities on site.
- The Contractor, sub-contractors and all employees are expected to be aware of potential fire risks.

- The Contractor shall hold fire prevention talks with staff to create an awareness of the risks of fire. Regular reminders to his staff on this issue are required.
- No fires are to be allowed on site unless approved by the PE.
- The Contractor shall ensure that there is adequate fire-fighting equipment on site.
- The Contractor shall be liable for any expenses incurred by any organisations called to assist with fighting fires and for costs involved in rehabilitation of burnt areas/property/persons, should the fire be the result of the Contractor's activities on site.

The following mitigation measures are to be implemented by the Contractor:

- Prevention of runaway fires by keeping vegetation short in working areas;
- Ensure that no fires are lit close to bushed areas;
- Ensure that lighting of fires on windy days are prohibited;
- Ensure that adequate fire fighting equipment; and
- Ensure that emergency services contact numbers are available on site.

7.1.8 Protection of Archaeological Sites

- Potential features of heritage significance may exist beneath the soil surface.
- Should any archaeological remains or unmarked human burials be uncovered during construction, construction must be stopped immediately and it must be reported to SAHRA and an archaeologist.
- No further disturbance of the construction site is allowed until the necessary approval has been obtained.

7.1.9 Social Disruption

- The Contractor shall give at least seven days notice to the residents in the vicinity of the construction activities of his intention to begin construction activities in their area.
- The Contractor shall ensure that access to property is not unreasonably disrupted.
- The Contractor's employees shall in no way be a nuisance to nearby residents.
- A community complaints register is to be maintained on site.
- Any complaints received by the PE will be addressed and the relevant persons may be suspended from the project.
- The PE may request a representative to be available to discuss issues raised by residents and make information available to them on construction activities.

7.1.10 Protection of the Public

- The Contractor shall be responsible for the protection of the public, and public property, from any dangers associated with construction activities

- The Contractor shall be responsible for the safe and easy passage of pedestrians and traffic in areas affected by project activities.
- Any excavated area, spoil sites and other obstructions or excavations shall be suitably barricaded and/or demarcated with hazard tape.
- The Contractor should ensure that hazards and warning signs are erected at problem sites, and that they are maintained.
- The contractor shall have an emergency phone numbers/ contact details list displayed at the contractor's camp in an easily visible area.

7.1.11 Vehicle and Access Roads

Site vehicles should be permitted only within the demarcated construction sites or on existing roads, as would be required to complete their specific tasks.

The Contractor must implement all mitigation measures, which should include the following:

- Avoid obstructing roads and tracks as far as possible;
- Repairing any damage done to roads that resulted from construction activities;
- Restricting any road/track upgrades to existing infrastructure unless these are insufficient in terms of engineering or environmental requirements;
- Minimising any impact on surrounding land use should it prove necessary to expand existing roads or tracks; and
- Engineering any road/track repairs or upgrades to acceptable engineering standards.

7.1.12 Site Camp

Where a site camp is to be established the feasibility of removing topsoil from the site, before site establishment should be investigated. Removed topsoil should then be stockpiled for use when rehabilitating the site camp.

- The site camp shall not be located in an environmentally sensitive area.
- The site shall be located > 50 m from a watercourse (including drainage lines).
- Runoff from site must be prevented from entering any water bodies; all water requiring discharge should be discharged in a manner approved by the PE.
- Site camps and surrounds are to be maintained in a clean, tidy and orderly condition at all times.
- Tanks for storing fuels, oils etc should be located in the site camp and shall be bunded with lined earth berms to hold 1.5 times the capacity of the tank.
- The earth beneath the tanks should be covered with crusher run (or the likes thereof) and this cover replaced periodically.
- After completion of the works the Contractor shall restore the area used to its former condition, including removal of rubble and foundations.
- Any compacted ground shall be ripped to loosen soil, topsoil is to be spread evenly over the site and watered to encourage grass cover.

7.1.13 Sanitation

- No staff may use streams/ drainage lines for personal washing, including cleaning of clothes.
- Toilet facilities, in the form of chemical toilets are to be provided at the site camp and within 200 m of any place where a significant number of workers will be working for an extended period of time.
- Contractors shall instruct their staff and sub-contractors that they must use toilets provided and not the veld, bush or streams.

7.1.14 Drinking and Construction Water

- Water for drinking and construction purposes should be obtained from local reticulation works, or an approved source.
- Unless approved by the Department of Water Affairs, water should not be extracted from dams or rivers, and construction activities should not be conducted in or directly adjacent to rivers, dams or wetlands.

7.1.15 Concrete Batching

- Concrete batching/mixing should be located > 200 m from the nearest watercourse or natural drainage line.
- The batching area must be bunded with earth berms or sandbags to prevent runoff escaping.
- Contaminated water should be allowed to soak away in a geo-textile lined soak pit.
- No water exceeding pH 9 shall reach a stream, as this is in contravention of the National Water Act of 1998.
- Any waste concrete and cement sludge shall be collected and disposed of at an approved landfill site.
- After closure of the area where concrete was mixed, all waste concrete/cement sludge shall be removed together with contaminated soil.
- The surface shall then be ripped to a depth of 150mm and the topsoil replaced evenly over the site and watered.
- Where the site was originally grassed, reseeding will be required.

7.1.16 Existing Services and Infrastructure

- The Contractor shall ensure that existing services (road, pipelines, powerlines and telephone services) are not disrupted or damaged, unless required by the contract and with the permission of the Engineer.

7.1.17 Vegetation Clearing

No large trees are present on the site and the area is dominated mainly by grass. However, should there be a requirement for vegetation clearing, the objective would be to:

- ensure the safe mechanical and electrical operation of the substation and turn-in lines;
- meet Eskom's legal, business and environmental obligations; and
- minimize the risk to affected landowners and the general public.

Should vegetation clearing be required, the following clauses in Eskom's Standard Servitude Construction Guideline shall be adhered to:

- In terms of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), Eskom (and/or its appointed contractor) shall prevent vegetation from encroaching on the minimum safety clearances of the infrastructure and the owner of the vegetation shall permit such control
- In terms of Eskom's servitude agreement, Eskom (and/or its appointed contractor) has the right to enter and be upon the property at any time whether it to be to perform work on the property itself, or to gain access to any adjacent property
- Eskom will exercise due diligence in its attempts to notify the owner of any intention to enter the property to cut trees and bush and endeavour to obtain consent to the proposed work
- In order to assist with access, Eskom may erect such gates as may be necessary, in consultation with the property owner. Under no circumstances shall access be gained by cutting or "dropping" fences. All gates shall be left closed and the Eskom servitude gates shall be securely locked at all times;
- Where there is any doubt as to whether a tree specie is protected or not, the Department of Environmental Affairs and Tourism or the local Eskom environmental practitioner in the area shall be consulted; and
- Indigenous trees and bushes that do not grow high enough to cause interference with infrastructure or cause a fire hazard, shall not be cut down or trimmed.

Herbicide use

- The use of herbicides shall be in compliance with the terms of The Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act 36 of 1947);
- In terms of the above Act, only a registered pest control operator may apply herbicides on a commercial basis. All application of herbicides shall be carried out under the supervision of a registered pest control operator;
- The Eskom Corporate Policy (ESKPBAAD4) and Standard (ESKASAAL0) on Herbicide use shall be adhered to; and
- A daily register shall be kept of all relevant details of herbicide usage and such register maintained by the relevant Eskom custodian.

7.1.18 Alien Vegetation

- Alien vegetation is to be removed from any working areas and the site camp as well as any areas where they establish as a result of the construction of operational activities.

- In order to discourage the spread of alien species, soil should not be moved from one part of the site to another without the consent of the ECO.
- All alien vegetation on cleared site areas is to be controlled for a period of 12 months subsequent to completion of the project.

7.1.19 Interference with Wildlife

No wildlife occurs or is expected to be found within the area of this project. Should wild life be found within the site:

- No poaching of wildlife will be tolerated and no snares or other hazards to wildlife may be utilised.
- Any Contractors' staff caught interfering with wildlife will face suspension from the project.

7.1.20 Work Stoppage

- The Environmental Control Officer has the right to order work to be stopped in the event of significant infringements of the Project Environmental Specifications, until the situation is rectified in compliance with the specifications.
- In this event, the Contractor shall not be entitled to claim for delays or incurred expenses.

7.2 Mechanisms for Monitoring Compliance with the EMPr

7.2.1 Internal Environmental Compliance

ESKOM has an internal environmental management department who are responsible for coordinating environmental management on all projects. This department should be tasked with the internal environmental compliance monitoring for this particular project.

The Environmental Control Officer shall inspect the site on a regular basis and will monitor the Contractor's performance in relation to the Project Environmental Specifications on a monthly basis.

7.2.2 External Auditing

External auditing shall be employed An independent Environmental Assessment Practitioner with experience in powerline infrastructure construction should be appointed to undertake at least two external audits associated with the construction phase of the proposed works.

The first audit should be undertaking within 1 month of construction commencing and a second on completion of construction prior to the handing over of the final completion certificate by the Project Engineer.

7.3 Audit Reporting

Monthly reports are to be prepared by the Environmental Control Officer in respect of the following:

- The reports will contain any infringements of the Project Environmental Specifications; and
- The reports may also aim at anticipating problems and so alert the Contractor to potential environmental risks and the appropriate action that may be taken. Major environmental infringements, e.g., contravention of a condition of authorization or clause of the EMPr, are to be reported to the relevant environmental authority immediately.

The Project Engineer will make the content of these reports known to the Contractor.

External audit reports are to be prepared by an Independent Environmental Practitioner and are to be submitted to the relevant environmental authorities.

The audit reports will include the following at a minimum:

- An estimate of the level of compliance with the EMPr by the contractors;
- Any infringements of the Project Environmental Specifications;
- Any changes to the scope of the project;
- A description of the project progress and an estimate of the anticipated completion date; and
- Any key issues or environmental problems that arise through the construction phase.

8 REFERENCES

Arcus GIBB, 2011. Draft Basic Assessment Report for Eskom Qunu Substation

9 APPENDIX A

ENVIRONMENTAL AUTHORISATION

TO BE INSERTED ONCE ISSUED BY DEA

DOCUMENT CONTROL SHEET
(FORM IP180/B)

CLIENT : ESKOM

PROJECT NAME : ESKOM Qunu BA **PROJECT No.** : J30285

TITLE OF DOCUMENT : ESKOM Qunu Substation Draft Basic Assessment Report

ELECTRONIC LOCATION : **P:\J30285_Qunu Substation\3-Tasks\Reports**

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