



**ESKOM TOMBO-MAFINI 132 kV POWER LINE**

**ENVIRONMENTAL MANAGEMENT PROGRAMME**

**Revision 0**

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July 2012

**TOMBO-MAFINI 132KV POWER LINE  
ENVIRONMENTAL MANAGEMENT PROGRAMME**

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## LIST OF ABBREVIATIONS

|       |  |
|-------|--|
| ADM   | Amathole District Municipality                               |
| DAFF  | Dept of Agriculture, Fisheries and Forestry                  |
| DEDEA | Department of Economic Development and Environmental Affairs |
| DWA   | Department of Water Affairs                                  |
| EAP   | Environmental Assessment Practitioner                        |
| EIA   | Environmental Impact Assessment                              |
| ECO   | Environmental Control Officer                                |
| EMPr  | Environmental Management Plan / Programme                    |
| PM    | Project Manager  |

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## GLOSSARY OF TERMS

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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 (EMP):** 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.

**Interested and Affected Parties (I&APs):** Interested and/or Affected in terms of Regulation 56(c) of the regulations published in Government Notice No. R. 19519 under Chapter 5 of the National Environmental Management Act (Act No. 107 of 1998)

**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

**SANBI:** South African National Biodiversity Institute

**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 the future needs (Brundtland Commission, 1987).

# 1 **ESKOM TOMBO-MAFINI 132 KV POWERLINE**

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## 1.1 **Introduction**

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ARCUS GIBB (Pty) Ltd. has been appointed by ESKOM Distribution Division to apply for environmental authorisation in terms of Section 24 of the National Environmental Management Act, (Act 107 of 1998) for the construction of required distribution infrastructure for the Tombo-Mafini 132 kV powerline.

Network strengthening is needed in order to meet ESKOM's anticipated growth in electricity demand in the area. In addition the new infrastructure will aim to improve the reliability of electricity supply to the O.R. Tambo District Municipality, which currently is constrained by overloaded supply. The O.R. Tambo District Municipality is plagued by frequent power outages due to an unreliable supply as well as increasing demand for electricity supply to community service facilities (schools, clinics, etc.), businesses and households.

To this end, Eskom is proposing to construct approximately 16.5 km of 132 overhead power line from the existing Dumasi-Zimbane 132 kV powerline to the Tombo substation.

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## 1.2 **Environmental Principles**

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The following principles should be considered at all times during the pre-construction and construction phase activities:

- The Environment is considered to be composed of both biophysical and social components.
- Construction is a disruptive activity and all due consideration must be given to the environment, including the social environment, during the execution of a project to minimise the impact on affected parties.
- Minimisation of areas disturbed by construction activities (i.e. the footprint of the construction area) should minimise many of the construction related environmental impacts of the project and reduce rehabilitation requirements and costs.
- As minimum requirements, all relevant standards relating to international, national, provincial and local legislation, as applicable, shall be adhered to. This includes requirements relating to waste emissions (e.g. hazardous, airborne, liquid and solid), waste disposal practices, noise regulations, road traffic ordinances, etc.
- Every effort should be made to minimise, reclaim and/or recycle "waste" material.
- The Environment is held in public trust for the benefit of people, due care must therefore be exercised to ensure that the rights of others with respect to its use are respected. This requires that a risk averse and cautious approach to the management of activities associated with the project be adopted at all times.

## 2 PREPARATION OF ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

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Arcus GIBB (Pty) Ltd is a multi-disciplinary engineering and environmental consultancy organisation made of a number of professional staff who collectively have over a century of experience.

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 viz:

- Environmental advisory services;
- Strategic environmental assessments (SEAs);
- Environmental management frameworks (EMFs);
- Environmental impact assessments (EIAs);
- Environmental management programmes (EMPs);
- 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 a comprehensive ISO 9001:2008 Quality Management System. In accordance with this system all documentation is professionally reviewed prior to distribution.

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### 2.1 Details of Environmental Practitioner that prepared the EMPr

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### 2.2 Expertise of Environmental Practitioner that prepared the EMPr

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Richard Judge (BSc honours) is an Environmental Consultant with four years experience. Richard specialises in Environmental Impact Assessments, including scoping studies, public participation and co-ordination of specialist studies as well as the compilation of Environmental Management Programmes, applications to the Department of Mineral Resources, Department of Water Affairs Water Use License Applications, environmental management planning, monitoring and control and

geotechnical analysis including physical, structural, chemical and groundwater components.

## **2.3 Purpose and Structure of the EMPr**

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### **2.3.1 Purpose**

This environmental management programme (EMPr) is intended to meet the requirements of Section 24N of the National Environmental Management Act (Act 107 of 1998) and the EIA Regulations 2010. It therefore provides:

- Details of project components and activities outlined in the Basic Assessment Report.
- Descriptions of roles, responsibilities and personnel involved in the construction phase with respect to environmental management.
- Details of the environmental specifications to be implemented.

### **2.3.2 Structure**

This EMPr is structured so as to provide guidance during the following project phases:

- Planning and design of the Power line.
- Construction of the Power line.
- Operation and maintenance of the Power line (i.e. the lifetime or duration of the project).

Decommissioning of the project is not specifically addressed here, however, provisions for the formal amendment or modification of the EMPr are included.

### 3 PROJECT DESCRIPTION

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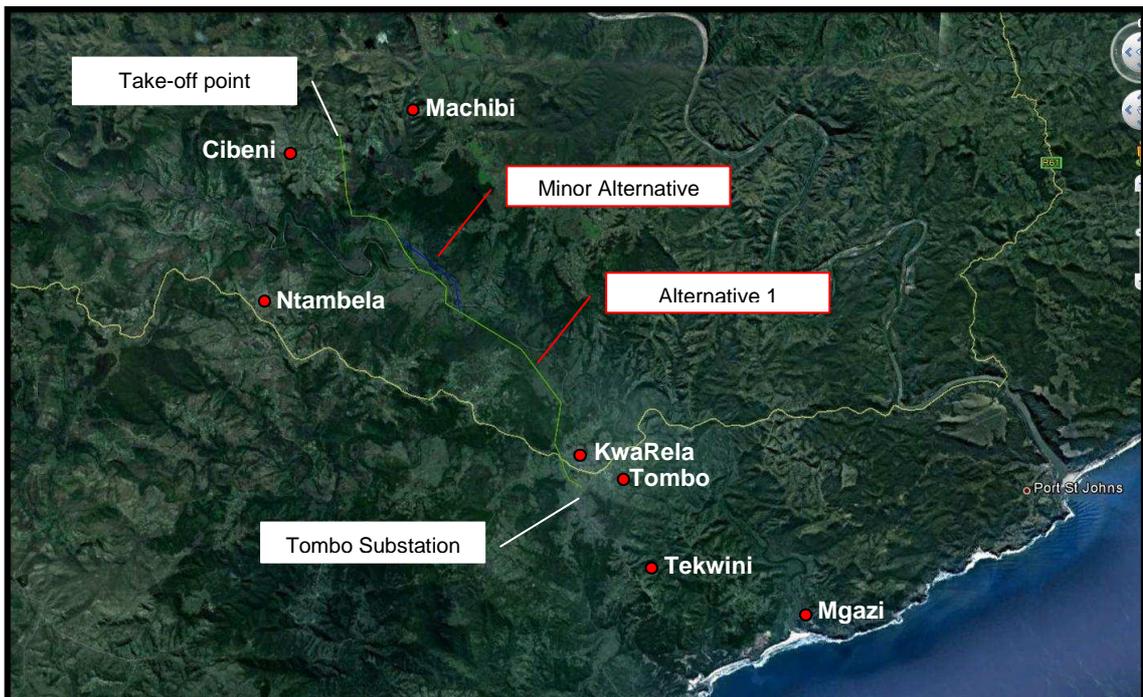
#### 3.1 Project Location

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The study area is located approximately 70 km to the southeast of Mthatha and falls within the Port St Johns Local Municipality and Nyandeni Local Municipality. The take-off point will be from the existing Dumasi-Zimbane 132 kV power line at a point within the Nyandeni Local Municipality. The new Tombo-Mafini 132 kV powerline will travel in a south-easterly direction where it links up with a previously authorised Dumasi-Tombo powerline where it travel for approximately 2 km to the Tombo substation, located adjacent to the road that feeds Mpande and is near the R61 road intersection some 20 km from Port St Johns on the R61 to Mthatha. The Dumasi-Tombo power line and Tombo substation formed part of an EIA undertaken in 2010, of which received Environmental Authorisation on the 20<sup>th</sup> of September, 2010 (authorisation register number 12/12/20/1493).

**Table 1: GPS Co-ordinates for the Tombo-Mafini 132kV powerline**

| Take-off point (Dumasi-Zimbane 132 kV power line) |                  |
|---|------------------|
| 31° 31' 29.40" S                                  | 29° 17' 3.41" E  |
| Proposed Tombo substation                         |                  |
| 31° 37' 56.59" S                                  | 29° 22' 29.78" E |



**Figure 1: Locality map indicating the location of the proposed powerline (indicated with green) and minor alternative (indicated with blue) (Google Earth, 2012).**

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## 3.2 Site Description

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The take-off point will be from the existing Dumasi-Zimbane 132 kV power line at a point within the Nyandeni Local Municipality. The new Tombo-Mafini 132 kV powerline will travel in a south-easterly direction where it links up with the previously authorised Dumasi-Tombo 132 kV power line and follows the same lineation for approximately 2 km where it links up with the Tombo substation, located adjacent to the road that feeds Mpande and is near the R61 road intersection some 20 km from Port St Johns on the R61 to Mthatha.

The proposed works all fall within un-alienated state land. The properties on which the powerline extend are classified as: RE/35, RE/36, RE/38; RE/39; RE/40. Numerous villages and settlements of varying densities and extents are located on hill tops and upper slopes. Landuses within the site area are primarily rural residential and agricultural.

The site consists of undulating hills and incised wide valleys. Three main vegetation types, namely the Ngongoni Veld, Eastern Valley Bushveld and the Southern Mistbelt Forest, dominate the study area and all three are classified as being Least Threatened or Vulnerable. The Eastern Valley Bushveld cover the majority of the study area (Mucina and Rutherford, 2006) and characterise the flanks of most rivers, where Acacias and Euphorbias dominate. The Ngongoni Veld borders the coastal strip.

Much of the pristine indigenous vegetation has been transformed by agriculture (i.e. cultivated lands) and settlements in the vicinity of the project and thus the human impact levels on natural vegetation have been very high. Open grasslands that are grazed with domestic stock have been poorly managed in terms of high stocking density and the application of poor burning regimes. This has caused many of the highly palatable grass species (e.g. *Themeda triandra*) to become replaced with less desirable/ unpalatable grasses (e.g. *Aristida sp*). Remaining intact patches of indigenous vegetation are therefore of high conservation value as they provide habitat and refuge for the remaining indigenous fauna species in the study area.

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## 3.3 Project Definition

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The project entails:

**Construction of ±16.5km of 132kV Chicadee line from existing Dumasi-Zimbane 132 kV power line extending to the Tombo substation**

- 16.5 km 132 kV overhead line
- 65 guyed steel monopole structures
- An area with a strip width of 6m will be cleared along the entire route.
- The foundations are constructed first, followed by the assembly of the towers on the ground, then the erection of the towers and finally the stringing and regulation of the conductors.

## 4 CONSTRUCTION EMPR

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The Department of Environmental Affairs (DEA) requires that an EMPr to guide project implementation be compiled for the construction of the Eskom Tombo-Mafini 132kV powerline in order to:

- minimise potential environmental damage on site; and
- effectively manage impacts of the project on the environment.

This section of the EMPr outlines the actions required to protect the natural, social and socio-economic environment during construction.

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### 4.1 Implementation

---

The Construction EMPr provides specifications that the Contractors shall adhere to, in order to minimise adverse environmental impacts and optimise opportunities associated with construction activities. It also outlines the roles and responsibilities of the Developer, the Environmental Control Officer (ECO), the Contractor and the Project Manager which comprise the formal Environmental Management team.

The EMPr shall form the Environmental Specification so that all parties are aware of their environmental responsibilities during construction activities.

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.

|            |  |
|------------|--|
| EPL 32-727 | Safety, Health, Environmental and Quality Policy   |
| EPC 32-248 | Environmental Management Programme Guideline   |
| EPC 32-247 | Procedure for Vegetation Clearance and Maintenance within Overhead Powerline Servitudes and Eskom owned Land |
| EPC32-247  | Procedure for Vegetation Clearance and Maintenance within Overhead Powerline Servitudes and Eskom owned Land |

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### 4.2 Roles and Responsibilities during the Construction Phase

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This section outlines the roles and responsibilities of those involved in the construction process, with the end goal of best meeting objectives of environmental best practice.

#### **4.2.1 ESKOM Management (Proponent)**

Eskom has the ultimate responsibility to ensure the protection of the environment throughout the pre-construction, construction and rehabilitation phases of the proposed development. The proponent will be responsible for:

- Being familiar with the contents of the EMPr.
- Appointing an ECO.
- 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.
- Supporting the Project Manager in enforcing the Environmental Specifications.
- Communicating with all role players in the interests of a co-ordinated effort to protect the environment.
- Provide written notice to the Department of Environment Affairs (DEA) of commencement of construction.
- Ensuring a copy of the Environmental Authorisation is available on site at all times.

#### **4.2.2 Environmental Control Officer**

An ECO should be appointed by the proponent at commencement of the construction phase. The ECO will monitor the implementation of the Construction EMPr. The function of the ECO must be fulfilled by a competent individual with experience in environmental management. The ECO will have the following responsibilities:

- To advise the Project Manager (PM) on the interpretation and enforcement of the Environmental Specifications.
- To supply environmental information.
- To be knowledgeable of the pre-construction state of the environment in order to inform rehabilitation measures stipulated in the EMPr.
- To provide on-site environmental guidance.
- To audit the Contractor and Sub-contractors on implementation of the specifications of the EMPr. A monthly audit shall be undertaken and the audit reports should be distributed to The Proponent (Eskom), Project Manager, and to the Department of Environmental Affairs (DEA) (reporting period will be dependent on authorisation conditions and length of construction phase).
- To demarcate particular sensitive areas and pass instructions on work in these particular areas.
- To inform contractors of environmental sensitivities associated with the site (and provide training input where required or necessary).

### 4.2.3 The Contractor and Sub-Contractors

The contractor has the responsibility to:

- Comply with the Environmental Specifications contained in this document.
- Be familiar with the EMPr and ensure that the latest version is available on site.
- Be familiar with the Environmental Authorisation, a copy of which must be kept on site.
- Be familiar with any No-Go area and associated restrictions.
- Notify the ECO and PM immediately in the event of any accidental infringements of the Environmental Specifications to enable appropriate remedial action to be taken.
- Ensure environmental awareness among their employees and sub-contractors so that they are fully aware of, understand the need for and comply with the Environmental Specifications of the EMPr.
- Undertake rehabilitation of all areas affected by construction activities to restore them to their original states, as determined by the ECO.
- Undertake the required works within the designated working areas.

### 4.2.4 The Project Manager

The PM is required to:

- Be familiar with the contents of the EMPr.
- Ensure that the Contractor complies to the specifications of the design plan, (which incorporates environmental issues)
- Communicate to the Contractor the advice of the ECO and the contents of the ECO reports and issue site instructions giving effect to the ECO requirements where applicable.
- 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 ECO, 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 ECO any infringements of the Environmental Specifications and accompany the ECO during site inspections.
- Discuss with the ECO the application of any penalties and other possible enforcement measures when necessary.
- Maintain a Complaints Register, record complaints from the public and communicate these to the Developer and ECO.
- Facilitate communication between all role-players in the interest of effective Environmental Management.

- Monitor the compliance of the Contractor through the ECO reports.
- Allow for environmental protection works within the project budget.
- Determine the imposition of penalties for infringement of the Environmental Specifications.

#### **4.2.5 Communication and Co-ordination**

It is in the best interest of environmental management that a coordinated effort between all responsible parties be established. Open lines of communication at all times are therefore encouraged.

With open communication the role of the ECO should be a positive one - aimed at being proactive in preventing problems - rather than a negative "policing" role when negative impacts have already occurred.

All agreements reached shall be documented in writing and no verbal agreements should be made.

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### **4.3 Planning and design Environmental Specification**

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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:

#### **4.3.1 Routing of Powerline**

The powerline should avoid all sensitive habitats. This includes wetlands, the Southern Mist Belt Forest as well as ridge areas. Pylons are to be sited so to avoid areas of inappropriate geological or soil properties.

The powerline should also follow existing routes, access roads and tracks where practice to prevent new access tracks from being built. Planning of access routes must be done in conjunction with the Contractor, Eskom and the Landowner.

#### **4.3.2 Design of Structures**

Guyed monopole structures are to be utilised due to their reduced avifaunal impacts and improved visual impact compared to the 5-pole wooden towers. Pylons are to be fitted with perching brackets and the sensitive areas identified in the avifaunal report, including the river crossing, should be marked with suitable anti-collision marking devices. An avifaunal walk-through should be undertaken once the exact pylon positions have been surveyed and finalised in order to accurately determine which areas are to be marked.

#### **4.3.3 Surveyors and Field Work**

All field staff involved in the Planning and Design Phase should make use of existing access roads where practical. Should new access roads be required, these are to be constructed following cleared areas such as cattle pathways.

#### 4.3.4 Additional Authorisations

Additional statutory approvals and authorisations may be necessary in order to commence construction of the project. This includes permitting for water use, disturbance to stream banks, disturbance to protected tree species (all DWAF approvals), amongst others. It is ESKOM's responsibility to ensure that all such approvals are in place prior to construction commencing.

---

### 4.4 Construction Environmental Specification

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#### 4.4.1 Site Demarcation

Site camp and "No Go" areas shall be clearly demarcated to avoid unnecessary disturbance. These areas and any new access tracks are to be clearly defined and demarcated, preferably by means of fencing, at commencement of construction.

For the duration of the project, construction is to be restricted to designated working areas. Restriction of construction to designated (with fences or other demarcations) working areas assists in ensuring the limitation of impacts on the environment, and areas which have not been identified for construction.

*Definitions:*

"No Go" areas are often of deep aesthetic, historical and/or environmental value, such as riparian vegetation, natural forests or ancestral burial sites.

Working areas are those areas necessary for the contractor to complete the required construction, and should be approved by the PM.

#### 4.4.2 Site Preparation and Clearing of Vegetation

Site preparation shall be undertaken in accordance with the following parameters:

- 1 Topsoil to a depth of 150 mm is to be removed from those areas where:
  - i. Site camps are to be established.
  - ii. Where material stockpiles and construction materials are to be located.
  - iii. Construction vehicles will be parked overnight.
  - iv. Roads (including temporary roads) will be constructed.
  - v. Fuels and other hazardous substances will be stored.
  - vi. Concrete will be mixed.
- 2 Removed topsoil is to be stockpiled for rehabilitation of these areas on completion of construction.
- 3 Non-woody vegetation such as grasses and forbs should not be removed prior to stripping topsoil from work areas in order to assist in maintaining viability of the soil during storage.

- 4 Clearing of vegetation must be undertaken in accordance with the following parameters:
  - i. Vegetation may only be cleared within demarcated work area boundaries.
  - ii. No vegetation may be cleared from demarcated "No Go" areas, nor may any material, waste or spoil be stored or dumped in such areas.
- 5 Areas disturbed by construction activities are to be re-vegetated as per Eskoms Landscape Architect.
- 6 Adequate sanitary and ablution facilities must be provided for construction workers and serviced regularly.

#### **4.4.3 Stockpiling of Topsoil**

- 1 Topsoil is to be stripped from areas affected by construction and related activities prior to the commencement of major works.
- 2 Care must be taken not to mix topsoil and subsoil during stripping. Topsoil, subsoil and overburden are to be stockpiled separately.
- 3 Stockpiles should not be situated such that they obstruct natural water pathways and drainage channels.
- 4 Topsoil stockpiles should not exceed 1 m in height.
- 5 Stockpiles are to be located within the demarcated construction site.
- 6 Topsoil should not be mixed with any other material (e.g. building rubble).
- 7 Any alien invasive species which establish themselves upon stockpiles are to be removed before use of stockpiled material in rehabilitation of the site post-construction.
- 8 Erosion of topsoil stockpiles must be prevented.
- 9 Stockpiled topsoil is to be used for rehabilitation of the site on completion of construction.
- 10 Grass and forbs should not be removed prior to stripping of the topsoil.
- 11 No driving of vehicles or heavy plant on topsoil stockpiles is permitted.
- 12 Topsoil is to be conserved for rehabilitation of disturbed areas post construction.

#### **4.4.4 Cut Material and Subsoil**

- 1 Subsoil, cut material or spoil are to be stockpiled separately from topsoil.
- 2 Cut material which cannot be used on site is to be disposed of at an off-site spoil site, which must be identified in consultation with the PM and ECO.

#### **4.4.5 Erosion Prevention**

- 1 The Contractor is to provide a **method statement** on erosion control showing clearly how cleared surfaces and stormwater will be managed on site during construction and rehabilitation. No erosion will be tolerated on site.

- 2 Where necessary, anti-erosion measures, such as but not limited to the construction of contour berms, cut-off drains or planting of grass, shall be implemented.
- 3 Areas where erosion is likely (e.g. steep slopes [gradient > 6%], areas cleared of topsoil, and topsoil stockpiles) should be monitored to allow for timely response in the event of erosion.
- 4 Erosion should be managed or prevented throughout the construction process.
- 5 In the event of erosion the contractor shall be held financially responsible for necessary rehabilitation.

#### **4.4.6 Waste Management**

Appropriate waste management strategies should be adhered to at all times.

##### **(a) Solid Waste Management**

- 1 Waste bins with lids should be provided at regular intervals throughout the site camp including any sub-contractor camps.
- 2 Waste bins with lids shall be made available at all working areas.
- 3 Bins shall be emptied regularly and the accumulated waste disposed of at a recognised disposal site. Documentary confirmation of the location and status of the disposal site to be used must be obtained from the local municipality (municipal manager's office).
- 4 Burning or burying of any waste is not permitted.
- 5 The site is to be checked for litter daily. All litter should be collected regularly and deposited in the waste bins.
- 6 Non-reusable building material is to be treated as waste and disposed of at an appropriately permitted disposal site.
- 7 Cement aggregates should be collected and disposed of at an appropriately permitted disposal site.
- 8 Used cement bags and containers which held hazardous materials or substances are to be collected into a dedicated hazardous waste container/containment area and disposed of appropriately.
- 9 Construction rubble must be disposed of in pre-agreed, demarcated spoil dumps that have been approved by the Engineer and ECO.

##### **(b) Effluent and Stormwater Management**

- 1 Cement mixing and batching plants shall be undertaken at least 100 m away from any water course or natural drainage line. Appropriate measures to prevent runoff escaping from the mixing/batching area must be taken.
- 2 Cement must not be mixed directly on the ground surface and must be mixed on an appropriately lined surface.
- 3 Waste water from batching operations or ready mix trucks shall be discharged into a lined pond provided for this purpose. The pond is to be de-sludged regularly, and the cement residue removed from site and disposed of at an appropriately permitted disposal facility.

- 4 No water contaminated with cement shall be allowed to enter any natural water course or drainage line.
- 5 Project workers are not to use rivers for washing or bathing.
- 6 Grey water is to be disposed of at least 100 m from natural water courses.
- 7 Pollution of ground and surface water must be avoided.
- 8 Ablution facilities must be available within walking distance to all workers.
- 9 Where chemical toilets are used at least one toilet per 10 to 15 individuals must be available.
- 10 Portable/chemical toilets shall be emptied at regular intervals by suitably qualified contractors, according to appropriate health and safety standards.
- 11 No human waste shall be allowed to enter any water courses or natural drainage lines.
- 12 Toilets shall be secured to prevent them blowing over during periods of high winds.
- 13 Toilet paper must be provided at each toilet.
- 14 Separate toilets are to be provided for male and female workers.
- 15 Contaminated wastewater must be managed by the Contractor to ensure that existing water resources on the site are not contaminated. All wastewater from general activities in the camp will be collected and removed from the site for appropriate disposal.

#### **4.4.7 Material Use, Handling and Transport**

##### **(a) Fuels and Oils**

- 1 Storage tanks shall be bunded so to contain 110% of the combined volume and the bund is to be fitted with a drainage control valve which is to remain closed except when the bund is being emptied. Accumulated rain water is to be released from the bund after rain events.
- 2 Spills are to be avoided as far as is practically possible. Where spills occur compromised soil/vegetation shall be treated as hazardous waste and disposed of accordingly.
- 3 A spill log in which a record is maintained of the volume, nature, location, date, time and clean up action taken is to be kept on site and updated daily. Spills of greater than 10 l in volume or which occur in areas where ground or surface water may be affected are to be reported to the ECO and DEA within 48 hours of their occurrence.
- 4 Fuels and oils are to be contained within sealed containers at all times.
- 5 Equipment for dealing with hazardous waste spills shall be kept on site and be accessible at all times.
- 6 Construction vehicles and heavy plant standing for extended periods of time (e.g. overnight) must have drip trays placed beneath them.
- 7 Fire prevention measures must be taken in the vicinity of vehicles and stored oil and fuels.
- 8 The servicing of vehicles is to take place off site at an area constructed for such.

(b) Hazardous Materials

- 1 Information on all hazardous materials shall be kept on site and available to all. This must include safety information such as how to handle these materials or treat injuries as a result of these materials.
- 2 Hazardous materials must be stored in a contained, stable and safe environment with relevant labels placed on storage containers and lids firmly applied to prevent spillage.
- 3 Storage facility is to comply with relevant safety and hazardous material regulations.
- 4 Staff training is to be provided for all those handling and working with hazardous materials.
- 5 Hazardous Chemical Substances Regulations promulgated in terms of the Occupational Health and Safety Act 85 of 1993 and the SABS Code of Practice must be adhered to.

(c) Mechanical and Transport Equipment

- 1 Topsoil and vegetation to be removed in areas designated for storage of equipment, and stockpiled appropriately (refer to sections 4.4.2 and 4.4.3 of this EMPr).
- 2 Drip trays to be used when refuelling equipment to prevent soil contamination.
- 3 Disposal of contents of drip trays to be in accordance with relevant hazardous materials disposal requirements.
- 4 Storage area should be located within the demarcated site camp boundary.
- 5 Repair or servicing of machinery and vehicles are to be undertaken in a designated service area at the site camp. The service area is to be:
  - i. Level.
  - ii. Surfaced with an appropriate impermeable surface.
  - iii. Equipped with drip trays and a basic spill cleanup kit.

**4.4.8 Construction Vehicles and Access Roads**

Construction vehicles are to be permitted only within the demarcated construction site or on existing roads. No-go areas (Southern Mist Belt Forest) are to be avoided.

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

- 1 Vehicle access to the powerline must as far as possible be limited to existing roads. If new access roads need to be constructed, they should follow cleared areas such as cattle pathways.
- 2 The contractor is to ensure that all access roads are suitably marked as such. Roads not to be used will be marked with a "NO ENTRY" sign.
- 3 Where it is necessary for construction vehicles to use off-site public roads such use is to comply with the relevant road traffic legislation. This includes implementation of:
  - i. "Stop-go" controls at public road access points.

- ii. Warning signs.
  - iii. Safety barriers.
- 4 Construction vehicles moving through residential areas shall maintain a speed of 30-40 km per hour or less.
  - 5 Construction and delivery vehicles moving on gravel roads outside residential areas shall travel at speeds of no more than 60 km/hour in order to minimize dust.
  - 6 Dust suppression measures need to be implemented in site when necessary to reduce the dust impacts. These include but are not limited to regular spraying of working/ bare surfaces with water, at an application rate that will not result in erosion.
  - 7 Repair of roads damaged by construction vehicles will be at the cost of the contractor/proponent.
  - 8 Material used in road construction is to be sourced from appropriately permitted sources. Proof of provenance, e.g. waybills, is to be maintained in a 'receiving goods' register.
  - 9 No vehicles transporting concrete to site may be washed on site.

#### **4.4.9 Noise and Dust Control**

- 1 Noise levels must be kept within acceptable limits. All noise and sounds generated must adhere to SABS 0103 specifications for maximum allowable noise levels.
- 2 Operations in the vicinity of private residences or public meeting places shall be carried out at reasonable hours and work on Sundays and public holidays is to be avoided.
- 3 Contractor to provide method statement of site specific dust control measures.
- 4 Dust suppression can be undertaken by watering relevant areas. Watering of steep slopes should be conducted in moderation and with an erosion monitoring system in place.
- 5 Stockpiles are to be covered with high density shade cloth or other similar material, appropriately pegged down, to assist in suppressing dust.

#### **4.4.10 Work Stoppage**

The PM and ECO shall have 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.

#### **4.4.11 Heritage Resources**

Where heritage resources are discovered (e.g. burial sites, archaeological and palaeontological artefacts) during construction the following will apply:

- 1 Work at the point of the discovery is to cease, and may not recommence until such time as guidance from the South African Heritage Resources Agency (SAHRA) has been received.
- 2 The point of discovery is to be clearly demarcated.

- 3 The SAHRA is to be informed within 24 hours of the discovery.
- 4 Under no circumstances will archaeological or paleontological artefacts be removed, destroyed or interfered with by anyone onsite.

#### **4.4.12 Social disruption**

The Contractor's employees shall in no way be a nuisance to nearby residents. Any complaints received by the PM will be addressed and the relevant persons will be suspended from the project.

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 PM may request a representative to be available to discuss issues raised by residents and make information available to them on construction activities.

The Contractor shall ensure that access to property is not unreasonably disrupted.

A community complaints register is to be maintained on site.

#### **4.4.13 Protection of Public**

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

#### **4.4.14 Fire Prevention**

- 1 A fire officer is to be appointed by the contractor.
- 2 "No-smoking" signs to be placed in areas used for storage of oil and fuel.
- 3 All flammable substances must be stored in dry areas which do not pose an ignition risk.
- 4 No open fires are to be allowed on site unless in a demarcated area approved by the ECO.
- 5 All cooking will be done in demarcated areas that are safe in terms of runaway or uncontrolled fires.
- 6 Basic fire fighting equipment shall be readily available on site.
- 7 Employees shall be made aware of the procedures in the event of a fire.

#### **4.4.15 Rehabilitation**

- 1 Soil compacted during the construction of the power line should be deeply ripped to loosen compacted layers and regarded to even running levels.

- 2 All areas affected by construction activities will be rehabilitated to the satisfaction of the ECO.
  - 3 The rehabilitation of trenches and disturbed areas must be done with indigenous grasses local to the area and that require minimal horticultural maintenance.
  - 4
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## **4.5 Monitoring and Auditing**

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### **4.5.1 Monitoring and Time Frames**

- 1 The PM, supported by the ECO, is to monitor the Contractor's compliance with the specifications set out in the EMPr.
- 2 Alien invasive species establishment on site should be monitored by the Developer for 3 months after completion of construction.

### **4.5.2 Auditing and Reporting Requirements**

- 1 Monthly audits of compliance with the EMPr are to be undertaken during the construction period by the ECO.
- 2 On completion of construction and rehabilitation a close out audit is to be undertaken by the ECO in conjunction with the PM.
- 3 Audit reports are to be submitted to the Developer, PM and DEA within 10 days of each audit.

## **5 OPERATIONAL PHASE EMPR**

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The Department of Environmental Affairs (DEA) requires that an EMPr to guide project implementation be compiled for the construction and operation of the Tombo-Mafini 132 KV line in order to effectively manage impacts of the project on the environment.

This section of the EMPr outlines the actions required to protect the natural, social and socio-economic environment during operation of the project.

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### **5.1 Implementation**

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The Operational Phase EMPr provides guidelines that the Project Owner (ESKOM Holdings (Pty) Ltd) must adhere to.

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### **5.2 Roles and Responsibilities**

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This section outlines the roles and responsibilities of those involved in the operational phase, with the end goal of best meeting conditions of environmental authorisation, objectives of environmental sustainability and best practice.

#### **5.2.1 Project Owner**

The project owner is the holder of the environmental authorisation, or anyone to whom ownership of the project is transferred.

ESKOM Management has the ultimate responsibility to ensure the protection of the environment throughout the operational phase of the proposed development. ESKOM management is responsible for:

- 1 Being familiar with the contents of the EMPr.
- 2 Ensuring that an appropriate surveillance programme for the regular monitoring of ground- and surface water quality is implemented
- 3 Making sufficient budget available for implementation and monitoring of the Operational Phase EMPr.
- 4 Communicating with all role players in the interests of a co-ordinated effort to protect the environment.
- 5 Ensuring a copy of the Environmental Authorisation, a copy of this EMPr and any amendments to either document is suitably filed in a formal document storage and retrieval system.

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### 5.3 Operational Phase Environmental Specification

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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;
- No disturbance of surface water features; and
- Closing gates and general respect for property.

## **6 AMENDMENTS**

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### **6.1.1 Construction EMPr**

The Construction EMPr may be amended and updated according to the conditions of the Environmental Authorisation and once the method statements have been confirmed and approved by the PM and ECO. Any proposed amendments to the Construction EMPr, as may be identified by the Contractor, must be confirmed with the ECO and Project manager. Amendments proposed by the ECO or Project manager must be confirmed with the Contractor. All proposed amendments must be discussed with the Amathole Regional Office of DEA prior to implementation, and a formal application for amendment lodged where required.

### **6.1.2 Operational EMPr**

The Operational Phase EMPr may be reviewed, amended and updated during the lifetime of the project. Such review, amendment or updating may be initiated by the DEA, ESKOM or any combination of these parties. Proposed amendments or updates to the Operational Phase EMPr may only be implemented with the written approval of the DEA or such responsible environmental authority as may be designated in terms of prevailing environmental legislation.

# DOCUMENT CONTROL SHEET (FORM IP180/B)

**CLIENT** : ESKOM (Pty)Ltd  
**PROJECT NAME** : Tombo-Mafini 132 kV powerline **PROJECT No.** : J29222  
**TITLE OF DOCUMENT** : Environmental Management Programme  
**ELECTRONIC LOCATION** : P:\J31095\_Eskom Tombo Mafini BAR\Task\EMP

|                          | Approved By  | Reviewed By  | Prepared By  |
|--------------------------|--|--|--|
| <b>ORIGINAL</b>          | NAME<br><b>Mervin Olivier</b>  | NAME<br><b>Mervin Olivier</b>  | NAME<br><b>Richard Judge</b>   |
| DATE<br><b>July 2012</b> | SIGNATURE<br> | SIGNATURE<br> | SIGNATURE<br> |

|                 | Approved By | Reviewed By | Prepared By |
|-----------------|-------------|-------------|-------------|
| <b>REVISION</b> | NAME        | NAME        | NAME        |
|                 | SIGNATURE   | SIGNATURE   | SIGNATURE   |

|                 | Approved By | Reviewed By | Prepared By |
|-----------------|-------------|-------------|-------------|
| <b>REVISION</b> | NAME        | NAME        | NAME        |
| DATE            | SIGNATURE   | SIGNATURE   | SIGNATURE   |

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