Ruigtevallei-Dreunberg 132 kV Powerline
Environmental Management Programme

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Appendix H: Ruigtevallei - Dreunberg 132 kV Powerline Environmental Management Programme

CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>1.1 Introduction</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>1.2 Project Background</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>1.3 Section 24G Methodology</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>1.4 Purpose and Structure of the EMPr</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>1.5 Implementation</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Proposed Project Details</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>Details of the Environmental Practitioner That Prepared the EMPr</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>3.1 GIBB (Pty) Ltd.</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>Roles and Responsibilities</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>4.1 Holder of Authorisation</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>4.2 Environmental Control Officer</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>4.3 The Contractor &amp; Sub-Contractors</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>4.4 The Project Engineer</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>4.5 Communication between Parties</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>Project Phases</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>5.1 Planning and Design Phase</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>5.2 Construction Phase</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>5.3 Operation or Maintenance Phase</td>
<td>12</td>
</tr>
</tbody>
</table>
6 Project Environmental Specifications 13

6.1 Construction Phase 13
6.2 Operational Phase 20
6.3 Decommissioning phase 21

7 Specialists’ Studies Requirements 22

7.1 Introduction 22
7.2 Avifaunal and Ecological Specialist Mitigation Measures 22
7.3 Heritage Specialist Mitigation Measures 6
7.4 Palaeontology Specialist Mitigation Measures 7

8 Mechanisms for Monitoring Compliance with the EMPr 9

8.1 Internal Environmental Compliance 9
8.2 External Auditing 9
8.3 Audit Reporting 9

Appendices
Appendix A: Maps Indicating Location of Anti-Collision Devices
Appendix B: Environmental Authorisation

List of Figures

Figure 1: Locality Plan and proposed route options for the Ruigtevallei – Dreunberg Powerline 6
Figure 2: Google earth© satellite image of the Farm 225 area c. 13 km WNW of Venterstad. The red dotted area is of high geoheritage and palaeontological heritage sensitivity (Permo-Triassic boundary fossil biotas). The yellow dotted area is underlain by potentially sensitive alluvium. Blue line: Route 1, Pink line: Route 2, Purple line: route 4 (Sourced from J. Almond 2014). 7
Figure 3: Sections of route 4 requiring anti-collision devices. (Sourced from Indwe, 2014) 11

Abbreviations
BA Basic Assessment
BAR Basic Assessment Report
DEA Department of Environmental Affairs
EA Environmental Authorisation
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAP</td>
<td>Environmental Assessment Practitioner</td>
</tr>
<tr>
<td>ECO</td>
<td>Environmental Control Officer</td>
</tr>
<tr>
<td>ECPHRA</td>
<td>Eastern Cape Provincial Heritage Resources Agency</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>EMPr</td>
<td>Environmental Management Programme</td>
</tr>
<tr>
<td>EMS</td>
<td>Environmental Management System</td>
</tr>
<tr>
<td>I&amp;APs</td>
<td>Interested and Affected Parties</td>
</tr>
<tr>
<td>IEM</td>
<td>Integrated Environmental Management</td>
</tr>
<tr>
<td>NEMA</td>
<td>National Environmental Management Act (Act no 108 of 1998)</td>
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<tr>
<td>PE</td>
<td>Project Engineer</td>
</tr>
<tr>
<td>PM</td>
<td>Project Manager</td>
</tr>
<tr>
<td>RE</td>
<td>Resident Engineer</td>
</tr>
<tr>
<td>SAHRA</td>
<td>South African Heritage Resources Agency</td>
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<td>SEA</td>
<td>Strategic Environmental Assessment</td>
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</tbody>
</table>
1 Introduction

1.1 Introduction

GIBB (Pty) Ltd. was appointed by Eskom Distribution Division to apply for environmental authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2010, for the completion of the construction of a new 132 kV overhead power line from the Ruigtevallei substation, located approximately 30 kilometres north-west of Venterstad, to the Dreunberg substation, located approximately 20 kilometres north of Burgersdorp, Eastern Cape.

As the construction of the powerline commenced without a valid authorisation (as described below) a Section 24G process is being undertaken to apply for retrospective authorisation. This Environmental Management Programme (EMPr) accompanies the Section 24G report.

1.2 Project Background

An application for authorisation was lodged and a Basic Assessment (BA) was undertaken in 2012 for the Eskom Ruigtevallei – Dreunberg 132 kV powerline (DEA reference 12/12/20/23/15). The final basic assessment report (BAR) was submitted to the Department of Environmental Affairs (DEA) on 18 June 2012 and authorisation was granted on 29 November 2012. Three route alternatives were proposed in the basic assessment, Eskom’s preferred route (Route 1) and two alternatives (Route 2 and 3). The BAR recommended alternative Route 3 and the DEA authorised Route 3. Eskom erroneously commenced construction of their preferred route (Route 1) with deviations (hereafter referred to as Route 4) which had not been approved.

It was established during an environmental audit carried out by an independent Environmental Control Officer (ECO) in September 2013 that the route under construction had not been approved in terms of the environmental authorization issued. Construction on unauthorised sections of the line has since been halted. A meeting was held with the DEA Compliance Division in Pretoria on 10 October 2013 to discuss the situation and to determine the way forward. A site meeting was held with the DEA and reactive inspections were undertaken on 17 October 2013.

It should be noted that sections of the route under construction are common to both Eskom’s preferred route and the authorised route (Route 3) and Eskom has thus continued construction along these common sections. However construction will soon have progressed as far as possible along the authorised route, at which time the contractor will stop all work. Eskom will at this point pay delay claims to the contractor of approximately R 80,000 per day.

The BA undertaken originally included specialist studies (biodiversity and avifauna, archaeology and palaeontology) and focused on the preferred route (Route 1), but also
considered alternatives Route 2 and 3. No fatal flaws were identified for any of the route options, but Route 3 was deemed preferable due to lower environmental impacts.

1.3 Section 24G Methodology

As Eskom have erroneously commenced with a listed activity which requires environmental authorisation. This EMPr has been compiled as part of the Section 24G report to address this non-conformance. The three specialist reports have been revised to include Route 4 as part of the Section 24G process. Mitigation measures recommended in the specialist reports have been incorporated into this EMPr.

The following actions are being undertaken as part of the Section 24G application:

- Public participation: The Section 24G application was advertised, site notices were placed and interested and affected parties (I&APs) were given the opportunity to review the draft Section 24G report.
- Review of specialist reports: The specialist reports compiled as part of the specialist reports were revised to include an assessment of Route 4.

1.4 Purpose and Structure of the EMPr

The EMPr will provide details of the:

- Project components and activities outlined in the BAR,
- Roles and responsibilities of all parties with respect to environmental management during construction, operation and decommissioning phases of the project, and
- Environmental specifications that must be adhered to on site.

1.5 Implementation

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

The EMPr shall inform the contractor of his/her environmental responsibilities and the associated costs during construction activities.
2 Proposed Project Details

The powerline is situated within the Gariep Municipality in the Eastern Cape Province and will cover a length of approximately 84 km. The powerline will run from the Ruigtevallei substation, located approximately 30 kilometers north-west of Venterstad, to the Dreunberg substation, located approximately 20 kilometres north of Burgersdorp. The 132kv powerline will be supported by steel monopole structures.

The proposed powerline route alternatives all cross agricultural lands for the majority for their length. Some route alternatives also cross sections of the Oviston Nature Reserve. The Section 24 G report has recommended that Route 4 (see layout plan below) be built.
Figure 1: Locality Plan and proposed route options for the Ruigtevallei – Dreunberg Powerline

Appendix H: Ruigtevallei-Dreunberg 132 kV Powerline EMPr
Rev 0/December 2014
3 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 EMPr.

3.1 GIBB (Pty) Ltd.

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;
- Strategic environmental assessments (SEA);
- Environmental management frameworks (EMF);
- Environmental impact assessments (EIA);
- Environmental management programmes (EMPr);
- Environmental management systems (EMS);
- Environmental training;
- Environmental monitoring and auditing;
- Public participation;
- Environmental permit and regulatory compliance management planning; and
- Waste management services.

GIBB has undertaken a broad range of high-profile EIA projects nationwide and within neighbouring countries. Significant linear and site specific projects undertaken recently by GIBB include:

- BA for a 132 kV powerline in the Eastern Cape from Dieprivier to Patensie..
- 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.
3.1.1 Details of EAP that Prepared the Environmental Management Plan

Table 1: Details of the EAP

<table>
<thead>
<tr>
<th>Name:</th>
<th>Walter Fyvie</th>
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<tbody>
<tr>
<td>Address:</td>
<td>PO Box 63703</td>
</tr>
<tr>
<td></td>
<td>Port Elizabeth 6001</td>
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<tr>
<td>Tel:</td>
<td>041 392 7500</td>
</tr>
<tr>
<td>Fax:</td>
<td>086 608 2522</td>
</tr>
<tr>
<td>E-mail:</td>
<td><a href="mailto:wfyvie@gibb.co.za">wfyvie@gibb.co.za</a></td>
</tr>
</tbody>
</table>

3.1.2 Expertise of the EAP’s to prepare an EMPr

Walter Fyvie is an environmental consultant with 12 years of experience in many different areas of environmental management, including Environmental Impact Assessments (EIAs) for large developments including renewable energy projects, and Environmental Auditing. His auditing experience has included industrial compliance audits, and construction projects in the role of Environmental Control Officer (ECO). He also consults in waste management. He has international experience as an environmental consultant, having worked in the UK for two years. With a technical background in zoology, biochemistry, biotechnology and environmental management, he appreciates the scientific, engineering and biological requirements of environmental projects. He is a registered Professional Natural Scientist and registered with the Interim Certification Board (ICB) of the Environmental Assessment Practitioners of South Africa (EAPSA).
4 \textit{Roles and Responsibilities}

4.1 \textbf{Holder of Authorisation}

Eskom, as the holder of the environmental authorisation, 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 ECO to monitor the implementation of the EMPr for the project;
- Allowing for environmental protection works within the project budget;
- Determining the imposition of penalties for the infringement of the environmental specifications;
- Supporting the engineer in enforcing the environmental specifications; and
- Communicating with all role players in the interests of a co-ordinated effort to protect the environment.

4.2 \textbf{Environmental Control Officer}

An ECO should be appointed to oversee the implementation of the EMPr and perform the role of an ECO. The ECO is required to:

- Demarcate sensitive areas and pass instruction to the contractor concerning works in these areas;
- Communicate any infringements of the environmental specifications to the authorisation holder and contractor;
- Discuss with the authorisation holder and project manager the application of any penalties and other possible enforcement measures when necessary;
- Facilitate communication between all role-players in the interest of effective environmental management; and
- Audit the contractor on implementation of the specifications of the EMPr. Frequency of monitoring by the ECO will take place as per the requirements in the environmental authorisation.
- Distribute audit reports to the authorisation holder and the contractor to ensure prompt action.

4.3 \textbf{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 the no-go areas and associated restrictions;
• Notify the ECO and project engineer (PE) immediately in the event of any accidental infringements of the environmental specifications to enable appropriate remedial action to be taken;
• Maintain a record of complaints from the public and communicate these to the project manager (PM) and ECO;
• 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 state, as determined by the ECO; and
• Undertake the required works within the designated working areas.

4.4 The Project Engineer

The Project Engineer (PE) is required to:
• Be familiar with the contents of the EMPr;
• 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 audit 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.

4.5 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.
5 Project Phases

5.1 Planning and Design Phase

The planning and design phase involves all pre-construction 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:

5.1.1 Design of Structures

- Structures are to be designed as per Section 7.2.2 of this report, and include installation of perching brackets and observing the appropriate distances between different conductors.
- All sections of the power line in and in close proximity to the Oviston Nature Reserve shall have aviation spheres mounted on the lines. This is to ensure that all power lines are visible during game census periods, as per requested by the Eastern Cape Parks Board.
- Bird Flight Diverters (BFDs) must be placed on the line as per the specialist study (See Appendix F of the Section 24G Report for the Biodiversity and Avian Report).

5.1.2 Surveyors and Field Work

- All field staff involved in the planning and design phase must make use of existing access roads.
- Access into the Oviston Nature Reserve must be negotiated with the Eastern Cape Parks and Tourism Agency well in advance. Sections of this Reserve house dangerous animals which may pose a safety risk to personnel. Unauthorised entry into a proclaimed protected area is a contravention of national and provincial legislation and carries a criminal sanction.

5.1.3 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.

5.2 Construction Phase

The construction phase for certain section of the line has commenced. A contractor has been appointed and a site camp has been established. The most acute environmental impacts associated with the proposed 132 kV power line occur during this phase of the project. For this reason Environmental Specifications have been prepared (Section Error! Reference source not found.) which the contractor must implement.
Eskom must ensure that these Environmental Specifications are included in any further tender documentation, so that aspects for environmental management are budgeted for and that contractors are fully aware of their obligations with regards to environmental management on site.

5.2.1 Monitoring and Reporting

The ECO is to conduct environmental audits and prepare compliance audit reports in accordance with the conditions of the environmental authorisation and the terms of their appointment.

<table>
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<th>Note:</th>
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<td>This section will be updated as per the environmental authorisation once received.</td>
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5.2.2 Record keeping

The ECO will monitor the applicant’s adherence to the EMPr 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 an audit report. The non-conformances must be documented and reported in the monthly report. These reports should be made available to the DEA when requested.

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

5.2.3 Removal of Existing Structures

There may be a need to remove existing tower structures that have been incorrectly located. In addition to the general construction requirements of this EMPr, the following should be observed:

- The working area footprint must be kept to a minimum and must be no larger than that used for the construction of the tower.
- All building waste generated through the deconstruction process must be removed from site.
- The disturbed area is to be rehabilitated. Where possible top soil is to be returned to the disturbed area. Where on a slope, it must be ensured that the surface finishing of the site does not encourage erosion.
- A method statement for the removal of structures must be drafted by the contractor and approved by the ECO and landowner prior to removal commencing.
5.3 **Operation or Maintenance Phase**

Once built and commissioned, periodic maintenance will be undertaken to keep the line operational, and repair 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 tracks, no “open bush” driving;
- Not littering;
- Not disturbance to surface water features; and
- Closing gates and general respect for property.
6 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 shall plan his work in such a way that compliance with the project environmental specifications is facilitated timeously.

6.1 Construction Phase

6.1.1 Construction in Conservation Area

The following environmental specifications must be strictly adhered to during construction of structures located in the Oviston Nature Reserve. For the purpose of easy identification of the structures located in this area the structure numbers, once finalised, must be entered into the table below and the specification noted must be strictly adhered to.

Table 2: Environmental Specifications in Oviston Nature Reserve

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Environmental Specification</th>
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<tbody>
<tr>
<td>Vegetation/Bush Clearing</td>
<td>No bush clearing to take place underneath the powerline, unless approved by the reserve manager. Contractors must minimise disturbance to the natural vegetation within the structure footprints. Permits to be obtained for clearing of indigenous vegetation.</td>
</tr>
<tr>
<td>Access Roads</td>
<td>Oviston Nature Reserve: Only existing access roads in the reserve are permitted to be used. Where this is not possible/practical and new access tracks are needed, the reserve manager is to be consulted before these tracks are established. The agreed location and route of all access tracks to be used during construction are to be indicated on a 1:10000 map, which is to be dated and signed by the contractor, reserve manager, Eskom project manager and ECO. Copies of this map are to be issued to each signatory and a copy is to be kept on site. Soil Erosion: Development of new access tracks must be done in such a manner that it causes minimal disturbance and does not result in soil erosion. After construction, the access roads are to be rehabilitated. This should be done as soon as construction vehicles leave the area to ensure rehabilitation takes place as soon as possible.</td>
</tr>
<tr>
<td>Aviation spheres</td>
<td>The sections of the power line within the Oviston Nature Reserve</td>
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Reserve must be equipped with aviation spheres so as to be visible during game censuses and capture operations, when helicopters are used.

The Sections identified in the map in Appendix A are to be fitted with Bird Flight Diverters.

Safety

Entry into the Oviston Nature Reserve must be communicated with the Eastern Cape Parks Board well in advance, as there is dangerous game within the sections of the reserve traversed by the line.

6.1.2 Working Areas

1. Construction activities may be undertaken only in designated working areas.
2. The site shall be divided into working areas and “no-go” areas.
3. Working areas must be demarcated during the construction period. At a minimum, the following working areas are to be clearly defined and demarcated:
   - Construction camps;
   - Stockpile areas;
   - Areas where bush clearing is required; and
   - Any new access tracks.
4. “No-go” areas are those areas outside of working areas. These include:
   - Watercourses outside of the 5 m wide working area; and
   - Areas of indigenous vegetation beyond the 35 m servitude width.

6.1.3 Excavation, Conservation and Stockpiling of Topsoil

1. Topsoil shall be excavated from the following areas no longer more than five days before the start of construction:
   - All areas to be excavated;
   - Areas for the storage of fuels;
   - Areas to be used for batching / mixing of concrete; and
   - Areas for stockpiling of construction materials.
2. 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.
3. Topsoil shall be stored in piles of no more 1 m in height.
4. Topsoil is valuable for its humus and seed content and shall be used for rehabilitation purposes.
5. Vegetation should not be removed prior to stripping of the topsoil.
6. Topsoil must not be mixed with any other material (construction rubble, sub soils, etc.) and erosion of the topsoil stockpiles must be prevented.
7. Weeds appearing on stockpiled topsoil must be removed by hand before seed formation.
8. Soil contaminated by hazardous substances must be disposed of in a recognised disposal site, and according to DEA requirements.
6.1.4 General Erosion Control

1. The contractor must take all reasonable measures to prevent soil erosion resulting from the construction of the infrastructure, restriction or increase in the flow of storm water or river flow caused by the presence of temporary or permanent works, operations and activities.

2. Erosion prevention measures must be implemented to the satisfaction of the Project Engineer.

3. Areas affected by construction related activities must be monitored regularly for evidence of soil erosion. Areas particularly susceptible to erosion are: areas stripped of topsoil, soil stockpiles and steep slopes (gradients > 6%).

4. Where evidence of erosion appears, the construction of contour berms, cut-off drains or planting of grass sods may be necessary.

5. 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.

6. Anti-erosion measures such as small berms should be constructed on steep access routes.

6.1.5 Prevention of Pollution

1. The contractor must ensure that pollution of the soil or water does not occur as a result of any activities on site.

2. The site of the works shall be clean and presentable at all times and the contractor shall take care to minimise any negative visual impacts of construction.

3. The site shall be kept clean, neat and tidy to the satisfaction of the PE.

4. The contractor shall provide appropriate bins at the work site and shall be responsible for disposal of refuse and waste generated by his staff on a daily basis.

5. All bins are to have lids, which must be used to prevent waste being blown away or scavenged.

6. All empty cement bags are to be collected daily and stored in an appropriate container at the site camp until removal to a disposal site.

7. No burning or burying of waste shall be permitted on site.

8. Waste shall be removed to an approved waste disposal facility.

9. Disposal slips for all waste removed from site are to be retained and filed for examination by the ECO.

10. Waste water from batching operations or ready mix trucks shall be discharged into in a geotextile lined pit dug for this purpose and the cement residue removed from site at a later stage.

11. No discharge of cement-laden water into any water course shall be permitted and all waste concrete shall be removed to an approved landfill.

12. Drip trays are to be used to protect the soil from oil or fuel spills in case of on-site emergency maintenance;

13. Minimisation of quantities of fuel, paints and other hazardous material kept at the construction site; and
14. Safeguarding of hazardous substances from being stolen, vandalised, catching fire or spilling on open ground.

6.1.6 Dust Control
1. The contractor shall be responsible for the control of dust arising from his operations and activities.
2. Control measures could include regular spraying of working / bare areas with water, at an application rate that will not result in soil erosion, or covering such areas and stockpiles with a temporary covering (e.g. mulch, shadecloth or tarpaulin).

6.1.7 Noise Control
1. The contractor must take reasonable measures to limit noise levels during construction, particularly in the vicinity of homesteads and livestock handling areas.
2. The contractor must familiarise himself with the legislation pertinent to noise generation.

6.1.8 Fire Prevention and Control
1. The contractor shall take all the necessary precautions to ensure that fires are not started as a consequence of his activities on site.
2. The contractor, sub-contractors and all employees are expected to be conscious of fire risks.
3. 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.
4. No fires are to be allowed on site unless approved by the PE.
5. The contractor shall ensure that there is adequate fire-fighting equipment and emergency services contact numbers are available on site.
6. 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.
7. Runaway fires shall be prevented by keeping vegetation short in working areas.

6.1.9 Social Disruption
1. The contractor’s employees shall in no way be a nuisance to nearby residents. Any complaints received by the PE will be addressed and the relevant persons will be suspended from the project.
2. The contractor shall give at least seven days notice to the residents in the vicinity of the construction activities of his intention to begin works in their area. The resident engineer (RE) may request a representative to be available to discuss issues raised by residents and make information available to them on construction activities.
3. The contractor shall ensure that access to property is not unreasonably disrupted.
4. A community complaints register is to be maintained on site by the contractor’s environmental representative.
6.1.10 Protection of the Public

1. 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.
2. Any excavated areas, spoil sites and other obstructions or excavations shall be suitably barricaded and/or demarcated with hazard tape/safety barrier mesh.
3. The contractor should ensure that hazard and warning signs are erected at problem localities, and that they are maintained.
4. The contractor shall have an emergency phone numbers/contact details displayed at the contractor’s camp in an easily visible area.

6.1.11 Vehicle and Access Roads

1. Site vehicles must be permitted only within the demarcated construction sites or on existing roads, as is required to complete their specific tasks.
2. Site vehicles should avoid obstructing roads and tracks as far as possible;
3. The contractor shall be responsible for the repair of any damage caused to roads that results from construction activities;
4. Existing access roads and tracks are to be used as far as is practically possible.
5. Landowner consent is to be obtained for any new tracks or deviations from existing tracks/roads. Documentary evidence of this consent is to be kept by Eskom.
6. Road/track upgrades should be restricted to existing infrastructure unless these are insufficient in terms of engineering or environmental requirements;
7. Road/track repairs or upgrades are to comply with acceptable engineering standards.

6.1.12 Site Camp

1. Topsoil removed from the site camp must be stockpiled for use when rehabilitating the site camp.
2. The site camp shall not be located in an environmentally sensitive area. The site shall be located more than 50 m from a watercourse (including drainage lines). Runoff from site must be prevented from entering any water bodies; all water requiring discharge must be discharged in a manner approved by the PE and ECO.
3. Site camps and surrounds are to be maintained in a clean, tidy and orderly condition at all times.
4. Tanks for fuels, oils, etc. must be stored in the site camp and shall be bunded with lined earth berms or placed in a rigid container which holds 1.5 times the capacity of the tank.
5. The earth beneath the tanks must be covered with an impermeable liner and crusher run (or the likes thereof) and this cover replaced periodically.
6. After completion of the works the contractor shall restore the area used to its former condition, including removal of rubble and foundations.
7. Any compacted areas shall be ripped to loosen the soil.
8. Topsoil is to be spread evenly over the site and watered to encourage establishment of grass cover.
6.1.13 Sanitation
1. No personnel shall use streams/drainage lines for personal washing, including cleaning of clothes.
2. 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.
3. Contractors shall instruct their staff and sub-contractors that they must use toilets provided and not the veld, bush or streams.

6.1.14 Drinking and Construction Water
1. Water for drinking and construction purposes must be obtained from local reticulation works, or an approved source.
2. Unless approved by the relevant water authority, water shall not be extracted from nearby dams or rivers, and construction activities shall not be conducted in or on the banks of rivers, streams, dams or wetlands.

6.1.15 Existing Services and Infrastructure
1. The contractor shall ensure that existing services (roads, pipelines, powerlines and telephone services) are not disrupted or damaged, unless required by the contract and with the permission of the engineer.

6.1.16 Vegetation Clearing Requirements
1. Eskom’s minimum standards for bush clearing are to be implemented where appropriate.
2. Only those shrubs and small trees which directly obstruct the placement of poles and stays are to be cut or removed.
3. Care must be taken on ridges and koppies to minimise the disturbance of succulents.
4. Vegetation clearing should be restricted to what is absolutely essential for construction purposes.

The following clauses in Eskom’s Standard Servitude Construction Guideline shall be adhered to:

i. No tree shall be allowed to grow to a height in excess of the horizontal distance of that tree from the nearest conductor of any powerline or to grow in such a manner as to endanger infrastructure should it fall or be cut down;

ii. For all practical purposes, tree cutting shall be confined to the building restriction area as referred to in the servitude;

iii. In terms of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), “The supplier or user of powerlines and substations shall control vegetation in order to prevent it from encroaching on the minimum safety clearances of the infrastructure and the owner of the vegetation shall permit such control”;
iv. The objective in clearing servitudes of trees and bushes is to ensure the safe mechanical and electrical operation of the line and to change from incompatible to compatible vegetation;

v. 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. However, 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;

vi. 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;

vii. Various species of indigenous trees and bush on private land are protected by law (National Forest Act, 1998 (Act 84 of 1998)) in terms of which it is necessary to obtain a permit from the relevant authority in order to cut them;

viii. Provincial ordinances shall be adhered to where it is absolutely essential to cut protected indigenous trees. The necessary permits as well as the owner’s written consent shall be obtained prior to commencement of any work;

ix. Where there is any doubt as to whether a tree species is protected or not, the Department of Environmental Affairs and Tourism or the local Eskom environmental practitioner in the area shall be consulted; and

x. 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

i. 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);

ii. 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;

iii. The Eskom Corporate Policy (ESKPBAAD4) and Standard (ESKASAAL0) on Herbicide use shall be adhered to; and

iv. A daily register shall be kept of all relevant details of herbicide usage and such register maintained by the relevant Eskom custodian.

Note – Eastern Cape Parks and Tourism Agency has requested that no bush clearing takes place underneath the proposed line within the Oviston Nature Reserve. The existing vegetation located underneath the proposed alignment should not pose any risk to the stringing or operational phase of the proposed activity to take place. Being located in a Nature Reserve special care should be taken to preserve/ conserve the natural vegetation as far as reasonably possible.
6.1.17 Alien Vegetation

1. 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 or operational activities.
2. 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.
3. All alien vegetation on cleared site areas is to be controlled for a period of 3 months subsequent to completion of the project.

6.1.18 Interference with Wildlife

1. 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 be reported to nature conservation authorities and face suspension from the project.
2. The Eastern Cape Parks and Tourism Authority, in the form of the Reserve Manager, must be informed of planned entry to the Oviston Nature Reserve by contractors prior to entry. Buffalo in the areas to be traversed by the line pose a potential safety risk to construction personnel.
3. National and provincial legislation governing access to and conduct within proclaimed protected areas applies to Oviston Nature Reserve. Contravention of this legislation may result in criminal prosecution.

6.1.19 Protection of Avifauna

1. Bird Flight Diverters must be installed as per recommendations from the avifauna specialists(refer to map in Appendix A of this EMPr).

6.1.20 Work Stoppage

1. The Eskom ECO shall have the right to, through the Engineer, recommend that work 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.

6.2 Operational Phase

Impacts associated with the operational phase of this project can be attributed to the maintenance and monitoring of the line, after construction. It is recommended that within the first two years after construction, quarterly inspections should be undertaken to check whether bird flappers and aviation spheres are effective.

6.2.1 Social Disruption

1. Eskom shall give at least seven days’ notice to the residents in the vicinity of the powerline of his intention to do maintenance/monitoring in their area.
6.2.2 Vehicle and Access Roads

1. Site vehicles must be permitted only within the demarcated on existing roads, as is required to complete their specific maintenance and monitoring tasks;
2. Vehicles must avoid obstructing roads and tracks as far as possible;
3. Access gates must be left as they were found (e.g. closed and locked);
4. The contractor shall be responsible for repairing any damage to roads that results from maintenance and repair activities;
5. Existing access roads and tracks are to be used as far as is practically possible;
6. Landowner consent is to be obtained for any new tracks or deviations from existing tracks/roads. Documentary evidence of this consent is to be kept by Eskom;
7. Road/track upgrades shall be limited to existing infrastructure unless these are insufficient in terms of engineering or environmental requirements;
8. All road/track repairs or upgrades to completed in accordance with acceptable engineering standards.

6.3 Decommissioning phase

The planned lifespan of the project is at least 20 years. It is therefore not necessary to compile a detailed EMPr for decommissioning at this time. However, the following broad guidelines may serve as the basis for a detailed decommissioning EMPr when such becomes necessary.

6.3.1 Communication with the public

Notice of the decommissioning of the powerline must be given to the public well in advance of this event. A minimum period of 12 months is suggested.

6.3.2 Removal of demolition waste

In the event decommissioning entails demolition of all or part of the powerline, all rubble and associated demolition waste is to be removed from site and disposed of in accordance with the relevant legislation.
7 Specialists’ Studies Requirements

7.1 Introduction

Three specialist studies have been conducted as part of the Section 24G process. The three reports drafted are as follows; avifaunal and ecological study conducted by Indwe Environmental Consulting, heritage study conducted by eThembeni Cultural Heritage and a paleontological study of the proposed site conducted by Natura Viva cc.

Below are the mitigation measures recommended by the specialists which are to be implemented as part of this EMPr.

7.2 Avifaunal and Ecological Specialist Mitigation Measures

7.2.1 Ecological Mitigation Measures

The biodiversity impacts of the proposed power line development will be further reduced if the following is implemented throughout the development:

1. Construction camps and material storage areas are to be located on disturbed ground.
2. These areas should be approved by an ECO prior to any construction on site establishment taking place.
3. Existing access roads to be used during the construction process wherever practically possible.
4. The clearance of trees must occur within the servitude only and clearing to occur only where absolutely necessary.
5. No structures should be located within 32 m of any surface water feature such as the watercourses, wetlands and farm dams.
6. No direct vehicle crossings through any watercourse should occur.
7. Construction should occur in the dry months to avoid impacts to wetland areas.
8. The making of fires on site or collection of firewood must be strictly forbidden.
9. No hunting, poaching, killing or collecting of species to occur by any construction or operation staff.
10. All areas outside the permitted access roads and the powerline servitude on the farms should be regarded as no go areas.
11. All disturbed areas should be monitored for establishment of alien vegetation. If alien vegetation gets established, it must be controlled using prescribed and accepted methods.
7.2.2 Avifauna Mitigation Measures

(a) Mitigation for bird collision with earth wire and conductor:

The below mitigation measures must be implemented to mitigate bird collision with earth wire and conductor.

1. Route 4 should be selected to reduce the risk of collision.
2. Sections of the line as identified by the avifauna specialist and marked in figure 2 shall be marked with anti-collision devices.
3. A final avifaunal walk through should be conducted of the authorised route to finalise the location of anti-collision devices.
4. Once the final sections of line have been identified, these should be fitted with a suitable anti-collision line marking devices on the earth wire as per Eskom standards. Note that recent research has shown that birds do still collide close to pylons, so it is not adequate to mark the middle two-thirds of the span as has sometimes been done in the past. The full spans must be marked.
5. The best possible device available and Eskom approved at the time of installation should be used.
6. It is important that devices are alternated with light and dark colours in order to provide contrast against dark and light backgrounds respectively.
7. It is essential that these devices be fitted as soon as possible after the stringing of the earth wire as the collision risk is realised as soon as the cable is strung and not only once the line is energised and commissioned.
8. It will be Eskom’s responsibility to monitor the integrity of these devices through the lifespan of the power line and replace or maintain devices where necessary.
9. It will be Eskom’s responsibility to monitor the effectiveness of these measures and apply additional mitigation if impacts still occur.
Mitigation for electrocution of birds on pylons:

The below mitigation measures must be implemented to mitigate bird electrocution on the pylons. The mitigate measures refer to the type of pylon structure used.

1. Route 4 should be selected to reduce the risk of electrocution of avifauna.
2. The pylon structure must be bird friendly, and specifically must be safe for vultures. The monopole must have a minimum of 2,000 mm of phase–phase and phase–earth clearance, must have a bird perch on top and must have a 45 degree insulator post from the insulator to the pole/ylon.
3. It will be Eskom’s responsibility to monitor the effectiveness of these measures and apply additional mitigation if impacts still occur.

7.3 Heritage Specialist Mitigation Measures

The following mitigation measures shall be implemented to mitigate impacts on heritage resources.

7.3.1 Construction Phase Mitigation

If alternative 1 or 2 is approved the graves on farm Murrayskop should be temporarily demarcated as follows to prevent damage during construction:

1. Graves should be clearly demarcated using a reversible method such as barrier tape by the ECO.
2. All graves must be fenced (preferably as a single unit). Metal stanchions should be hammered (not cemented) into the ground at a distance of at least 5 meters from the edge of the group of graves. At least two rows of wire shall be strung between posts. Red and white barrier tape should be threaded between the wires to create a highly visible chevron pattern.

None of the graves located on farm Murrayskop will be located within 100 m of any proposed pylon locations if route alternative 4 is approved. If further graves are identified during construction this following mitigation measures are required:

1. Direct impacts may be avoided by routing infrastructure at least 50 m away from graves.
2. Graves within 100 m of any pylon locations should be clearly demarcated during construction as described above.

7.3.2 Operational Phase Mitigation

If alternative 1 or 2 is authorisation graves will need to be permanently demarcated if vegetation management is required in the servitude. The most southerly of the farm labourer’s graves on farm Murrsayskop will be located within 50 m of the powerline if Route 1 or 2 is authorised.

Demarcation must adhere to the following guidelines:
1. All graves must be fenced using metal corner and straining posts and fencing wire, to a minimum height of 1.2 meters.
2. The fence must be located at a minimum distance of 3 – 5 meters from the nearest grave and have an access gate.
3. No further construction or maintenance activities may occur within a minimum distance of 10 meters from the edge of the fence, with the exception of periodic vegetation clearance.

7.4 Palaeontology Specialist Mitigation Measures

7.4.1 Construction Phase Impacts and Mitigation Measures

The following mitigation measures are required for the protection of fossil heritage.

1. Should route alternative 1 be approved pre-construction mitigation by a suitably qualified professional palaeontologist is required as outlined in section 7.4.2 below within the palaeontologically sensitive area of Farm 225 outlined in red in the figure below.

![Google earth satellite image](image)

**Figure 2**: Google earth© satellite image of the Farm 225 area c. 13 km WNW of Venterstad. The red dotted area is of high geoheritage and palaeontological heritage sensitivity (Permo-Triassic boundary fossil biotas). The yellow dotted area is underlain by potentially sensitive alluvium. Blue line: Route 1, Pink line: Route 2, Purple line: route 4 (Sourced from J. Almond 2014).

7.4.2 Potential Mitigation Measures

1. Where potentially fossiliferous rocks are present within the development area, the ECO responsible for the project should be made aware of the possibility of important fossils being present or unearthed on site and should regularly monitor all substantial excavations into superficial sediments as well as fresh (i.e. unweathered) sedimentary bedrock for fossil remains.
2. In the event that fossils are uncovered during construction the following steps shall be followed:

- The fossil shall be safeguarded - preferably *in situ* - by stopping work in the immediate vicinity and fencing off the area with tape to prevent further access;
- The fossil shall be reported by the ECO as soon as possible to the relevant heritage management authority, the Eastern Cape Provincial Heritage Resources Authority (ECPHRA) (Contact details: Mr Sello Mokhanya, 74 Alexander Road, King Williams Town 5600; smokhanya@ecphra.org.za) so that appropriate mitigation by a palaeontological specialist can be considered.
- A qualified palaeontological specialist should be appointed to inspect, record and (if warranted) sample or collect the fossil remains, at the developer’s expense.
- The palaeontological specialist must be in possession of a valid collection permit from SAHRA
- The palaeontological specialist must arrange for an accredited palaeontological repository (e.g. museum, university) to accept and curate the fossil material collected.
- All work would have to conform to international best practice for palaeontological fieldwork and the study (e.g. data recording fossil collection and curation, final report) should adhere to the minimum standards for Phase 2 palaeontological studies published by SAHRA (2013).
- Any further mitigation measures proposed by the palaeontologist should be implemented.
- Work should be allowed to resume only once clearance is given in writing by the relevant authorities.
8 Mechanisms for Monitoring Compliance with the EMPr

8.1 Internal Environmental Compliance

Eskom have 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 Eskom ECO 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.

8.2 External Auditing

An independent Environmental Assessment Practitioner (EAP) with experience in powerline infrastructure construction should be appointed to undertake external audits associated with the construction phase of the proposed works.

The first audit should be undertaking within 1 month of construction commencing. A final audit should be undertaken on completion of construction prior to the handing over of the final completion certificate by the PE.

8.3 Audit Reporting

Monthly reports are to be prepared by the Eskom ECO in respect of the following:
1. The reports will contain any infringements of the project environmental specifications; and
2. 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 are to be reported to the relevant environmental authority immediately.

The PE will make the content of these reports known to the contractor. External audit reports are to be prepared by an independent environmental practitioner. The audit reports will include the following at a minimum:
1. An estimate of the level of compliance with the EMPr by the contractors;
2. Any infringements of the project environmental specifications;
3. Any changes to the scope of the project;
4. A description of the project progress and an estimate of the anticipated completion date; and
5. Any key issues or environmental problems that arise during the construction phase.

Note: This EMPr must be amended in line with relevant conditions of environmental authorisation.
Appendix A

Map Indicating the Location of Anti-Collision Devices
Figure 3: Sections of route 4 requiring anti-collision devices. (Sourced from Indwe, 2014)
Appendix B

Environmental Authorisation

To be inserted once obtained from DEA.
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Appendix H: Ruigtevallei-Dreunberg 132kV Power Line EMPr
Rev 0/July 2014