

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

The Proposed Perseus-Gamma 2nd 765kV Transmission Powerline and Substations Upgrade, Northern Cape and Free State Provinces

(DEA Ref: 14/12/16/3/3/2/356)

May 2014

Submitted to:

NATIONAL DEPARTMENT OF ENVIRONMENTAL AFFAIRS

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Ck No. 2007/196934/23 • Income Tax Registration: 9455120163

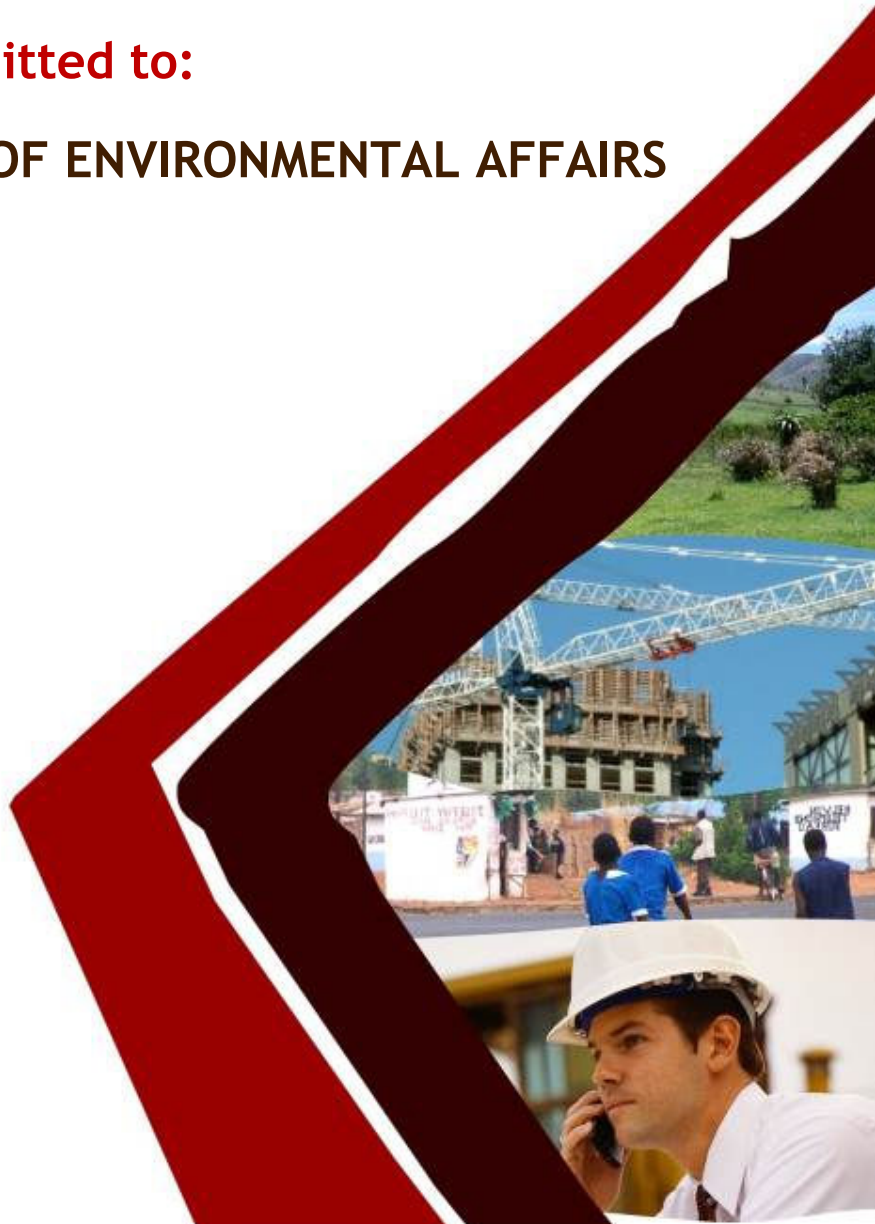


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TITLE AND APPROVAL PAGE

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|------------------------|---|
| DEA REF NO: | 14/12/16/3/3/2/356 |
| NEAS REF NO: | DEA/EIA/0001898/2013 |
| TITLE: | Draft Environmental Management Programme for the Proposed Perseus-Gamma 2 nd 765kV Transmission Powerline and Substations Upgrade. |
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| PROJECT STATUS: | Draft EIA Phase |
| REVIEW PERIOD: | May 2014 |

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02/05/2014

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1. OVERVIEW OF THE PROJECT

1.1 NEED AND DESIRABILITY

Eskom proposes to construct a second 765kV transmission powerline of approximately 405km between the existing Perseus Substation near Dealesville in the Free State Province and Gamma Substation near Victoria West in the Northern Cape Province. The proposed 765kV transmission powerline would also be associated with upgrades at the substations to accommodate the powerline.

The proposed transmission line is required in order to meet the anticipated growing demand for electricity in the Free State and Northern Cape Provinces. The aim of the proposed transmission powerline is to ensure that adequate and reliable electricity supply in these Provinces is achieved.

1.2 SCOPE OF THE PROJECT

The proposed project involves the construction of an approximately 405km long 765kV overhead transmission powerline. The project will also entail the upgrade of Perseus and Gamma substation so as to accommodate additional transmission capacity.

The upgrade of the substations would include the following:

- Construction of approximately 405km Perseus-Gamma 765kV powerline and associated work at the substations

Substation upgrade:

- Equip 1 x 765kV feeder bay at Perseus substation (extend existing busbar if necessary)
- Equip 1 x 765kV feeder bay at Gamma substation (extend existing busbar if necessary)
- Build the 2nd \pm 405km 765kV line from Gamma - Perseus with 400MVA line reactors at both ends

1.3 LOCALITY OF THE PROPOSED PROJECT

The proposed development falls within the jurisdiction of various municipalities namely: Tokologo Local Municipality; Letsemeng Local Municipality; Sol Plaatje Local Municipality; Ubuntu Local Municipality; Renosterberg Local Municipality ; Siyancuma Local Municipality; Thembelihle Local Municipality; Emthanjeni Local Municipality and Kareeberg Local Municipality and may run through various farms which will be identified during the Public Participation Phase.

Perseus substation is located in a town called Dealesville which is 56km south east of Boshof, the administrative capital of Lejweleputswa District. Dealesville is a mixed farming town characterised by salt pans and thermal springs. Perseus Substation is located within the jurisdiction of Tokologo Local Municipality which is part of Lejweleputswa District Municipality in the Free State.

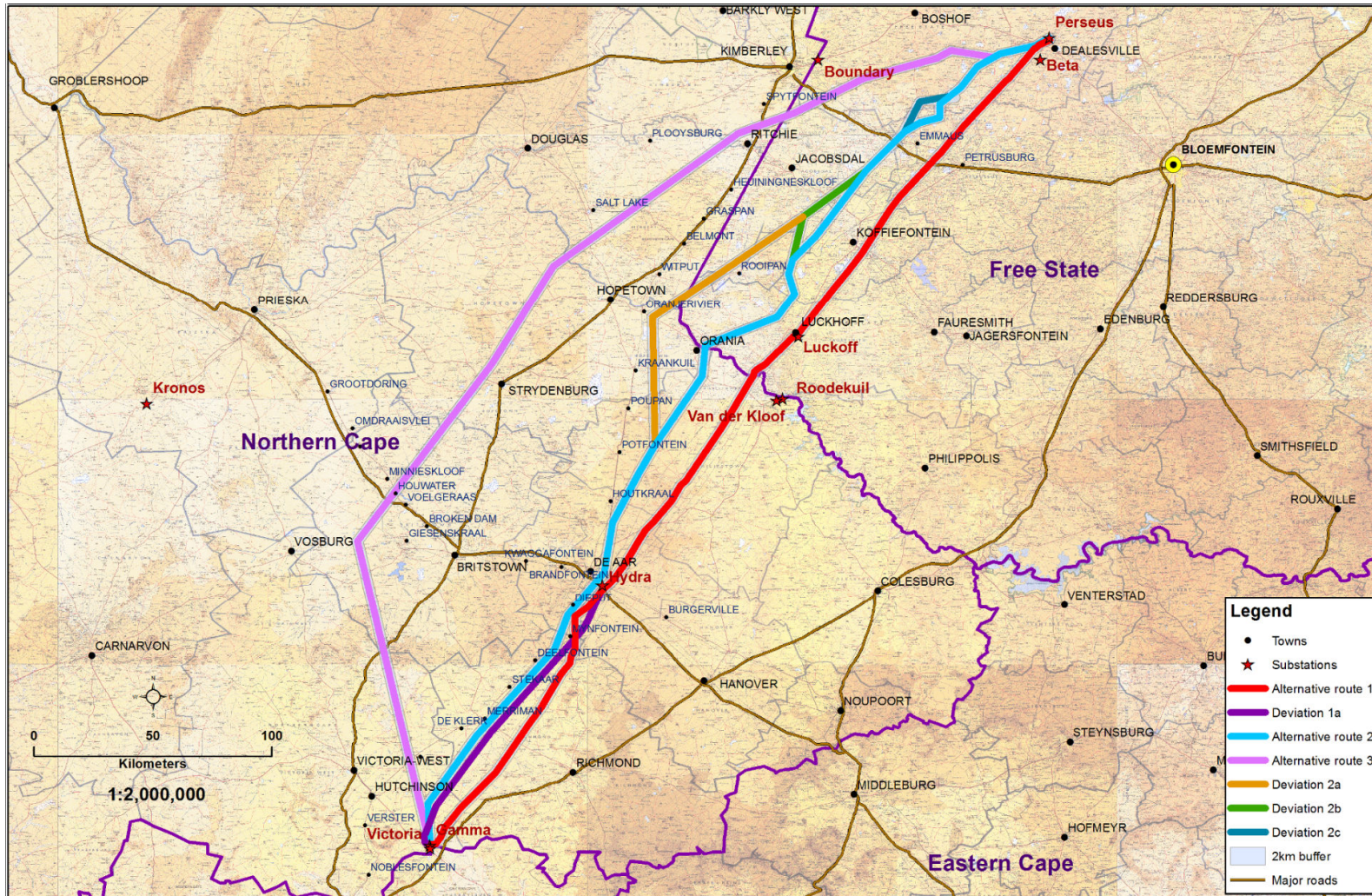
Gamma Substation is located within the jurisdiction of Ubuntu Local Municipality which is part of Pixelyka Seme District Municipality in the Northern Cape Province. Gamma substation is located on the outskirts of Victoria West. Victoria West is a small Karoo town situated some 150 km to the north of Beaufort West. The town is wedged in between two mountains and a river.

Table 1: Coordinates between Perseus and Gamma Substations

| | Alternative Route 1 | Alternative Route 2 | Alternative Route 3 | Deviation of Alternative Route 1(a) | Deviation of Alternative Route 2(a) | Deviation of Alternative Route 2(b) | Deviation of Alternative Route 2(c) |
|-------------------------------|--|--|--|--|--|--|--|
| Start point at Perseus | 28° 37' 58.44"S 25° 44' 39.207"E | 28° 37' 58.44"S 25° 44' 39.207"E | 28° 37' 58.44"S 25° 44' 39.207"E | N/A | N/A | N/A | N/A |
| Mid-point | 30° 02' 21.1462"S 24° 32' 22.9099"E | 29° 54' 48.8613"S 24° 25' 18.8928"E | 29° 30' 47.2031"S 23° 51' 51.8784"E | 30° 43' 15.2108"S 24° 03' 8.2119"E | 30° 10' 3.9007"S 24° 15' 4.3297"E | 29° 07' 58.0131"S 25° 02' 49.5027"E | 28° 51' 0.3219" S 25° 22' 18.2061"E |
| End point at Gamma | 31° 40' 49.1182"S 23° 24' 4.0777" E | 31° 40' 49.1182"S 23° 24' 4.0777" E | 31° 40' 49.1182"S 23° 24' 4.0777" E | 31° 40' 49.1182"S 23° 24' 4.0777" E | N/A | N/A | N/A |

Figure 1: Topographic Map of Study Area

Perseus and Gamma substations are separated by a generally homogenous topography, mostly in the form of flat plains. Hence, generally, the three alternatives considered are subjected to the same topographical changes and same climate regime.



1.4 POTENTIAL ENVIRONMENTAL IMPACTS ASSOCIATED WITH THE PROPOSED TRANSMISSION POWERLINE

Specialist findings were assessed and summarised in the Environmental Impact Report. Potential environmental impacts associated with the proposed transmission powerline are expected to occur during the construction and operational phases. Some of the identified potential impacts and recommended mitigation measures in the specialist studies are summarized below:

- **Vegetation and Fauna impacts** are due to the disturbance of habitats within the powerline servitude and the tower footprints. Mitigation measures should take the form of preventing construction of towers in / on ecologically sensitive areas.
- **Avifauna impacts** are as a result of collisions of birds with powerlines and habitat distraction during construction phase. To minimise this impact would require marking the earth wires of the proposed powerline with a suitable anti-collision marking device according to Eskom Transmission guidelines.
- **Wetland impacts** are as a result of changing the sediment amount entering water resources and the disposal of human sewage during the construction phase of the development. Recommended mitigation measures should take the form of maintaining buffer zones (50m from the watercourses) to trap sediments with associated toxins. During construction phase, provision of adequate sanitation facilities should be located outside its associated buffer zone.
- **Agricultural impacts** are caused by the transmission powerline constructed on agricultural potential land / arable cultivation land and overhead irrigation systems, where high value crops and valuable infrastructure will be affected. Mitigation measures should take the form of ensuring towers are sited away from any areas of intensive cultivation, such as areas of irrigation.
- **Visual impacts** on quality of landscape due to the presence of a transmission powerline in the operational phase and unsightly views caused by construction camp. Mitigations should take the form of avoiding transmission powerlines to cross through ridges, rivers or any natural features that have visual value. The vegetation occurring in the area to be disturbed by construction camps must be salvaged and kept in a controlled environment such as a nursery, for future re-planting in the disturbed areas as a measure of rehabilitation.
- **Heritage site impacts** are caused by disturbance or destruction during construction phase. Mitigation measures should take the form of isolating known sites and declare them as no-go zones with sufficient associated buffer zones around them for protection. SAHRA would have to be notified to this regard.
- **Social impacts** are as a result of influx of workers in the area and disturbance on land use and hence affecting adjacent landowners. As a mitigation measure; during the construction phase, the workers must be requested to respect the peacefulness and quiet of the area so as not to disturb the rural nature of the area. A positive impact would be the creation of unskilled Employment opportunities for local communities during construction phase.

- **Ecotourism impacts** The ecotourism industry in the study area is really focused on the Mokala National Park and the hunting farms in the surrounding region. Therefore, the impacts associated with the proposed development will also mainly affect these areas more specifically.

Overall, the specialist impact assessments undertaken have not found any significantly detrimental issues that can be caused by the proposed Perseus-Gamma 765kV transmission powerline. The impacts could be successfully mitigated through the implementation of the management measures in this EMPr.

2. PURPOSE OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME

This Environmental Management Programme (EMPr) will deal with the environmental impacts associated with all aspects of this project and the mitigation measures required to prevent or minimize these impacts. The EMPr can be regarded as a guideline document to be strictly adhered to during all phases of the project including the construction and operational phase.

An Environmental Control Officer (ECO) will be appointed to monitor and audit the various phases of the project. An acknowledgement form will be signed by the various parties and / or Eskom Holdings SoC Limited and the Contractors, and will form part of the contractual agreement between the Eskom Holdings Limited and the contractors to ensure that all the conditions and requirements of the EMPr are complied with.

A comparative assessment was carried out of published EMPr's, whilst site-specific conditions and new information that has come to light were also incorporated. The aim of this EMPr is to integrate environmental planning, design, construction, and operational activities for the proposed development.

Compliance with the EMPr will be monitored by an ECO, who will keep a record of the audits and any important information that can be produced on request.

The objectives of the EMPr are to:

- Provide a pro-active, feasible and practical working tool to enable the measurement and monitoring of environmental performance on site.
- Ensure that the construction and operational phases of the project continues within the principles of Integrated Environmental Management.
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project.
- Ensure that the safety recommendations are complied with.

This EMPr, which forms an integral part of the contract documents, informs the land owner as to his duties in the fulfilment of the project objectives, with particular reference to the prevention and mitigation of environmental impacts caused by construction and operational activities associated with the project. This is to include any rehabilitation and landscape processes work which is needed post-construction and which would be carried out by the contractor who may be appointed to do such rehabilitation work. The provisions of the EMPr are binding on the Contractor during the contract period and Eskom in the operational phase.

Any environmental issues that are identified during or after construction will be addressed in consultation with the environmental consultant. As such it should be viewed as a dynamic document that may require updating or revision where necessary.

All activities and earthworks associated with construction and reticulation of services will be undertaken in accordance with SABS 1200 standards, which deal with guidelines for civil engineering and general construction works.

3. PARTIES INVOLVED

Project Manager (PM - Eskom)

The Project Manager is appointed by Eskom Holdings SoC Limited to oversee the work of all consultants, contractors, residents and visitors.

Contractor (C)

This refers to the main contractor(s) appointed by Eskom for the construction of the Project, or portion of the Project. The main contractor(s) are required to adhere to the EMPr and are responsible to ensure that all sub-contractors, suppliers and staff appointed by them also adhere to the EMPr.

Environmental Liaison Officer

The Environmental Liaison Officer (ELO) will be appointed by the contractor to monitor activities on site on a daily basis. The ELO will be the ECO's representative on the site and will report back on all audit trips. The ELO must report any major incidents immediately to the ECO

All Staff

All workers Employed by the contractor or Eskom, persons involved with activities related to the project, or persons present or visiting the construction area, including permanent, contract, or casual labour and informal traders.

Environmental Control Officer (ECO)

An individual nominated by Eskom to act on behalf of a Contractor in matters concerning the day-to-day implementation of the EMPr, and for liaison with: Department of Environmental Affairs; Municipalities; Provincial departments; and other relevant stakeholders such as the public and owners or managers of properties affected by the powerline construction project.

An ECO must be appointed in terms of the NEMA EIA Regulations No. R543 of 18 June 2010. The ECO will inspect this development on a regular basis during the construction and rehabilitation phases, and will advise DEA and anyone acting in accordance with the Environmental Authorisation (e.g. Eskom, contractors etc.). In addition, anyone acting in accordance with the Environmental Authorisation (e.g. Eskom, contractors etc.) would have to comply with the EMPr. Furthermore, anyone

acting in accordance with the Environmental Authorisation (e.g. Eskom, contractors etc.) would need to sign an acknowledgement form, which will form part of the contractual agreements between individuals acting in accordance with the Environmental Authorisation (e.g. Eskom and the contractors) to ensure compliance with the conditions and requirements of the EMPr.

DEA

The Compliance Officer appointed by the National Department of Environmental Affairs to this project.

Local Community

People residing or present in the region and near the construction activities, including the owners and / or managers of land affected by construction, workers on the land, and people in nearby towns and villages.

Public

Any individual or group concerned with or affected by the Project and its consequences, including: the local community; local, regional, and national authorities; investors; workforce; customers; consumers; environmental interest groups; and the general public.

4. RECORD KEEPING

Copies of any Authorisation or EMPr's required for specific construction activities shall be kept on site and made available for inspection by visiting officials from the Employer or relevant environmental departments.

The Project Manager will monitor the Contractor's adherence to the approved impact prevention procedures and shall issue the Contractor a notice of non-compliance whenever transgressions are observed. The Contractor must document the nature and magnitude of any non-compliance in a designated register, the action taken to correct the non-compliance, the actions taken to mitigate its effects and the results of those actions. Any non-compliance shall be documented and reported to the Project Manager in a monthly report.

The Contractor shall also record all complaints received regarding activities on the construction site pertaining to the environment, and the response noted with the date and the action taken. These records shall also be submitted to the Project Manager in the monthly report.

All monthly and quarterly reports produced by the ECO should be submitted to both the construction manager and Eskom Project Manager. These reports should be kept in a file on site at all times.

5. COMPLIANCE AND PENALTIES

The duration over which the Contractor's controls shall be in place cover the construction period of the project as well as the limited time after the contract completion in the General Conditions of Contract, and the project specifications, as the defects liability period.

The Applicant / Contractor are deemed not to have complied with the EMPR if:

- Within the boundaries of the site, site extensions and access roads there is evidence of contravention of clauses;
- Environmental damage occurs due to negligence;
- The contractor fails to comply with corrective or other instructions issued by the Project Manager or Engineer or Environmental Control Officer within a specified time frame; and
- The contractor fails to respond adequately to complaints from the public or local community.

The Contractor shall act immediately after a notice of non-compliance is received, and correct the cause for the issuing of the notice. Application of a penalty clause will apply for incidents of non-compliance. The imposition of such a penalty shall not preclude the relevant provincial authority from applying an additional penalty in accordance with statutory powers.

Failure to redress the cause shall be reported to the relevant authority for them to deal with the transgression, as deemed fit. The polluter-pays principle applies.

The "polluter-pays" principle provides that "the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimizing further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment. NEMA imposes a duty of care on every person who causes, has caused or may cause significant pollution or degradation of the environment is authorised by law or cannot reasonably be avoided, NEMA requires that the pollution must be minimised and rectified.

Furthermore, NEMA makes provision for damages to be awarded by the courts where loss or damage has occurred as a result of a contravention of certain environmental statutes. For example, offences under the National Water Act No. 36 of 1965 and the Environmental Conservation Act No. 73 of 1989 may result in penalties being imposed in terms of NEMA. Importantly, NEMA provides for the liability on conviction of Employees, managers, agents and directors for any offences resulting from the failure to take all the reasonable steps that were necessary under the circumstances to prevent the commission of an offence.

6. AMENDMENTS TO THE EMPR

Any major issues not covered in the EMPr as submitted, will be addressed as addend to this EMPr, and submitted for approval prior to completion.

The EMPr is a living document and is subject to change from time to time in consultation with DEA. Any amendments to the EMPr will require approval from DEA.

A confirmation letter from DEA approving the amendments to the EMPr will be attached as addenda.

7. ENFORCING THE EMPR

The Applicant / Contractor have a responsibility to ensure that all those people involved in the project are aware of and familiar with the environmental requirements for the project (this includes sub-contractors, casual labour, etc.). The EMPr shall be part of the terms of reference for all contractors, sub-contractors and suppliers. All contractors, sub-contractors and suppliers have to give some assurance that they understand the EMPr and that they will undertake to comply with the conditions therein. All senior and supervisory staff members shall familiarise themselves with the full contents of the EMPr. They shall know and understand the specifications of the EMPr and shall be able to assist other staff members in matters relating to the EMPr. On completion of construction, the EMPr shall be part of the terms of reference for the applicant and shall be made available to all ongoing contractors entering the property.

8. SIGNING OF THE EMPR

The acknowledgement form provided in Annexure B is to be signed by the Applicant (Eskom) and all the Contractors. All the Contractor's Employees, especially the machine and equipment operators, are to be made aware of the conditions as contained in the EMPr and the contractual conditions relating to the environment, as contained in the contract document.

9. CONCLUSION

It is the view of the Environmental Assessment Practitioner that the preferred alternative route for the proposed powerline will not have any significant negative geophysical, biophysical or socio-economic environmental impacts provided the recommendations regarding the mitigation and rehabilitation measures presented in this EMPr are adhered to.

Please note: No construction work shall commence until the final EMPr is authorised by the Department of Environmental Affairs.

10. PROCEDURE

10.1 PRE-CONSTRUCTION PHASE

The requirements of the EMPr will be discussed at professional team meetings in order to understand the environmental content of the document. The requirements of the EMPr must be incorporated into any tender/contract documents by way of specific clauses that convey the impact and mitigation required. These clauses are to be agreed between the responsible professional members of the team and the environmental consultant.

10.2 THE CONSTRUCTION PHASE: RESPONSIBILITIES AND GENERAL MATTERS

Miscellaneous environmental matters and the relationships between the Contractors, ECO and the other members of the professional team are outlined in the following sections.

10.2.1 The Contractor

The Contractors must comply at all times with the requirements of the EMPr and must acknowledge in writing by signing the acknowledgement form that they will abide by the contents of EMPr.

10.2.2 The Applicant

Eskom (owning registered servitude of the powerline) must be in overall charge of the contract, the contractor/s and the adjudication of the EMPr requirements. Eskom can delegate the daily controls on site to a project manager or similar responsible person, when necessary.

10.2.3 The Environmental Control Officer (ECO)

Eskom must appoint an independent ECO for the purpose of ensuring that the environmental conditions as outlined in this EMPr are implemented by the Contractor.

Other environmental site-related issues will be monitored and reported on by the ECO as and when they may arise. The ECO is to have access to the site at all times, for the purpose of inspections to ensure that the environmental conditions of the EMPr are being implemented and adhered to.

10.2.4 Reporting Structure

Both the ECO and Contractor are obliged to report any incidents and non-compliance to the Eskom Project Manager at agreed intervals. The Environmental Liaison Officer (ELO) is responsible for advising and reporting to the Contractor during the construction process. Open communication between the ELO and ECO (Figure 2) should be encouraged so as to ensure that incidents identified are reported and rectified timeously.



Figure 2: Communication channel between ECO, ELO, C and Eskom PM.

10.3 ENVIRONMENTAL MANAGEMENT DURING PROJECT PHASES

The following tables (Pre-Construction Phase; Construction Phase; and Operational Phase) form the core of this EMPr for the construction and operational phases of the development. These tables should be used as checklists on site, especially during the construction phase. Compliance with this EMPr must be audited weekly or monthly depending on construction phase. After completion of construction, this must be followed up with annual audits for a period of two years during the operational phase.

Table 1: Table of abbreviations used below:

| Abbreviation | Meaning |
|---------------------|-------------------------------|
| C | Contractor |
| ELO | Environmental Liaison Officer |
| E | Engineer |
| PM | Project Manager |
| ECO | Environmental Control Officer |

PROJECT SPECIFIC TASKS FOR ECO

The functions, duties and responsibilities listed below are not exhaustive and the ECO will also be required to perform other duties, which may not be included herein, as required from time to time or as is consistent with the position.

Summary of Duties

To provide an on-site environmental management service to Eskom to ensure effective implementation of EA, EMP and landowner conditions. Ensure implementation and compliance with any Eskom site procedures and requirements. Be responsible for the planning and management of all environmental activities for this position, but more specifically the following.

Environmental Management

- Liaison between Project Manager, SHEQ/SHE/Environmental Manage, Senior Environmental Advisor, Site Supervisor, EO, affected and interested parties, authorities and stakeholders on environmental matters.

- Communicating changes of the Environmental Management Plan to all relevant parties.
- Maintaining climatic data on an ECO register using Eskom/Contractor EO readings.
- Issuing Contractors Communications and Site Instructions via the Site Supervisor or delegated person as delegated by the Project Manager.
- Certifying quantities of work done by the Contractor for correctness as far as access and environmental work is concerned.
- Monitoring performance of Contractor and sub-contractors to ensure compliance with environmental and statutory requirements.
- Validating the regular site inspection reports, which are to be prepared by the Contractor's EO.
- Checking the EO's record of environmental incidents (spills, impacts, legal transgressions, etc.) as well as corrective and preventive actions taken.
- Checking the EO's complaints register in which all complaints are recorded, as well as actions taken.
- Assisting in the resolution of environmental related conflicts.
- Compiling and completing the environmental management related component of the handing-over documentation and any other related documents.
- Acting as Land and Rights representative for all matters of environmental management.
- Timeously identifying any sensitive site issues which may affect environmental aspects and the reporting of this to the Project/SHEQ/SHE/Environmental Manager.
- Monitoring that good housekeeping practices are followed and maintained by the Contractor.
- Monitoring that the ground rehabilitation is initiated on time, complying with the EA, EMP and to the satisfaction of the landowner.
- Assisting the Contractor and Eskom EO with the environmental awareness training course to all site staff, targeted at the level of the workers so that they have a basic understanding of the environment that they are working in. The Contractor will provide an interpreter if needed.
- Monitoring that sensitive areas are demarcated within or alongside the construction areas i.e. sites identified in the EMP, EA. All personnel are to be informed of such sites and the reason the site is demarcated.

Monitoring

- Validating the site environmental monitoring plan.
- Validating the “Punch List/daily pre-warning” and reporting all defects and non-conformances as per the Control of Nonconformity Procedure.
- Carrying out environmental surveillances.
- Validating and recording of certificates proving the legal disposal of waste streams.

Reporting

- To complete a daily diary, bi-weekly and monthly (completed by the 24th of each month) reporting to Land and Rights and the Project/SHEQ/SHE/Environmental Manager on the compliance of the Contractor according to the environmental authorization, environmental management plan and landowner conditions. The reports are to include photographic images of special occurrences taking place during the reporting period.
- An environmental compliance report as required by the EA or Eskom, consisting of consolidated information from the reports to be submitted to the Director of Environmental Impact Evaluation. The ECO will send this report via registered mail, will keep one hard copy and send an electronic copy and a scan of the registered slip to Land & Rights. The intervals of the report will be as per the requirement of the EA.
- To attend site meetings as required.
- Obligated to inform Land and Rights and the Project/SHEQ/SHE/Environmental
- Manger of any activity that is not in accordance with the EA and respective Conditions, the Environmental Management Plan and Landowners’ agreed general and special conditions, or detrimental to the environment.

Administration

- To assure a proper site ECO administration function to cater for all environmental site related correspondence.
- To execute your environmental responsibilities as per Eskom’s Risk Management System.
- To promote and maintain sound relationships with landowners, community,

contractors and suppliers.

- To ensure that you are conversant with Eskom Environmental procedures and other procedures that may have an impact to the activities on site. To ensure that those procedures are followed.

Communication

- To liaise closely with the Eskom and Contractor's Environmental Officer (EO)
- To ensure that the landowners agreed General and Special Conditions are implemented.
- To negotiate the Access Plan between landowners and Contractor and to ensure its implementation, so as to provide timeous servitude access to the Contractor to carry out its duties with as little interference/objections as possible. ECO must identify if any large turning circles are required for large machinery, before this access is negotiated.
- To agree with landowners where gates are to be installed at fence crossings, before the Contractor gains entry to the properties for construction activities.
- To agree with landowners on the bush clearing method e.g. how must trees be chopped up, how must the waste be disposed of.
- To assist the Contractor's Environmental Officer (EO) in conflict resolution.
- Measuring and evaluating crop damage and other related claims, resulting from the construction activities, in conjunction with the landowner and submitting the relevant forms to the Project Manager for payment to the landowner (but not where the Contractor was negligent). This to be done equitably and timeously.
- To ensure that the Contractor rehabilitates any damage caused during construction. To indicate where bird guards, bird diverters, bird lights and aviation warning spheres are to be installed as specified in the EMP, EA conditions and or the line profile.
- After the final rehabilitation has been completed on a property, to obtain the immediate release from the landowner.

11. PRE-CONSTRUCTION PHASE

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|--|--|------------------|---|
| Legislation, permits and agreements | Site Owner, Developer, Service Providers, Contractors and Project Managers must remain in compliance with relevant local and national legislation. The supreme law of the land is “The Constitution of the Republic of South Africa” which states: “Every person shall have the right to an environment which is not detrimental to his or her health or well-being”. Laws applicable to protection of the environment in terms of Environmental Management include but are not restricted to those discussed in Section 4 in the draft EIR. | All | Prior to moving onto site, during construction and during operation |
| | A copy of the EMPr must be kept on site during the construction period. | C & PM | At all times |
| Access to site | Routing | | |
| | a. The Contractor will have to ascertain the existing condition of the access roads and repair accordingly should damage occur due to construction. | ECO, C & PM | Prior to moving onto site and during construction |
| | b. Access route must be clearly defined with white stakes / painted rocks and disturbance outside these areas is not permitted. | | |
| | c. Choice of access routes must take into account minimum disturbance to residents and businesses neighbouring the site. | | |
| | Haulage Roads | | |
| | a. All roads for construction access must be planned and approved by the Engineer and ECO ahead of construction activities. They must not be created on an ad-hoc basis. | E / PM / C / ECO | Prior to moving onto site and during construction |
| b. Roads must follow natural contours to reduce storm water runoff. | | | |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|----------|--|----------------|--------------------------------|
| | c. Roads must have as little cut and fill as possible. | | |
| | d. Road widths and radii of curves are to be reduced to minimum requirements. | | |
| | e. No trees / shrubs / groundcover may be removed or vegetation stripped without prior permission of the Engineer / Project Manager or ECO. | | |
| | f. Turning points will be marked out on the site for easy identification by contract workers. No turning manoeuvres other than at designated places shall be permitted. | | |
| | g. Contractors shall construct formal drainage on all temporary haulage roads in the form of side drains and mitre drains to prevent erosion and point source discharge runoff. | | |
| | h. Haulage roads must allow for the natural flow of water where required. Road surfaces must be permeable to allow infiltration of rainwater. A gravel surface is recommended on all slopes < 10%, grassblock on slopes > 10%. This must ameliorate edge effects and channelling of water and subsequent scouring along roadsides. | | |
| | i. Any natural veld along the proposed powerline route must be stripped to a soil depth of 150mm, and immediately translocated to a conservation area identified for rehabilitation. Material stripped from roads must be translocated five days post tillage. | | |
| | j. Haulage roads must follow existing or proposed roads wherever possible. Routes must be clearly defined with white stake/painted rocks. Disturbance outside these areas is not permitted. | | |
| | Survey Points | | |
| | a. Marking of survey points must be done with the Engineer and Project Manager's approval. | E / PM | During surveys and preliminary |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|--|---|------------------|---|
| | <p>b. Vegetation clearing and disturbance must be kept to a minimum during the survey operations, taking into account the high sensitivity areas of the site.</p> | PM / ECO | investigations |
| <p>Site Establishment (set up living quarters, site office, assembly area and workshops)</p> | <p>Layout & Location</p> | | |
| | <p>a. Choice of site for the Contractor's camp requires the Project Manager's permission and must take into account the location of local residents and ecologically sensitive areas, including flood zones and slip / unstable zones. A site plan must be submitted to the Engineer for approval. The construction camp must preferably be positioned on previously disturbed area.</p> | E / C / PM / ECO | During surveys and preliminary investigations and prior to moving onto site |
| | <p>b. If the Contractor chooses to locate the camp site on private land, he must get prior permission from both the Project Manager and the landowner.</p> | | |
| | <p>c. The size of the construction camp must be minimized (especially where natural vegetation or grassland has had to be cleared for its construction).</p> | | |
| | <p>d. The construction camp must be properly fenced and secured. It must be kept in a clean and orderly state at all times. This will deter rodents and other fauna from entering the camp.</p> | E / C / PM | During site establishment and ongoing weekly inspections |
| | <p>e. The construction camp must be located on a level area at least 50m from any watercourse / riparian zones. The position of the camp must be ratified by the Engineer and Environmental Control Officer.</p> | E / C / PM / ECO | During site establishment |
| | <p>f. The Contractor's camp may not be situated in a flood plain or on slopes greater than 1:3.</p> | | |
| | <p>g. The construction camp must be fenced with a 1.8m high bonnox (or similar type) fence.</p> | | |
| <p>h. The Contractor must attend to the drainage of the</p> | | E / C / PM / ECO | During site |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
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| | campsite to avoid sheet erosion and / or standing water. | | establishment |
| | Ablutions | | |
| | a. Where water borne sewage is not available, temporary chemical toilets must be provided by a company approved by the Project Manager. These toilets must be made available to all staff, and must be no closer than 50m from any watercourses. Such facilities, which shall comply with local authority regulations, shall be maintained in a clean and hygienic condition. Their use shall be strictly enforced. They shall be positioned in an appropriate place. | PM / C / ECO | During set-up |
| | b. The construction of a “long-drop” is forbidden. | PM / C | Ongoing |
| | c. There shall be a minimum of 1 toilet for every 20 workers and these must be situated no further than 100m from the work front. | | |
| | d. Under no circumstances may open areas or the surrounding bush or degraded and built up area be used as a toilet facility. | | |
| | Provision for Camp Waste Disposal | | |
| | a. Bins and / or skips shall be provided at convenient intervals for the disposal of waste within the camp. The bins must be covered to prevent wind-blown rubbish and scavenging by people and animals. | PM / C / ECO | During site set-up and ongoing |
| | b. Bins should have liner bags for efficient and safe disposal of waste. | | Ongoing |
| | c. At least three rubbish bins must be located at the construction camp for the collection of waste. | | During site set-up and ongoing |
| | d. Recycling and the provision of separate waste receptacles for different types of waste should be encouraged. Where possible, plastics, paper, glass and cans should be separated from other domestic waste for recycling. If waste is to be recycled, appropriately labelled | | Ongoing |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|----------|---|----------------|----------------------|
| | <p>d. Residents living adjacent to the construction site must be notified of the existence of the hazardous storage area.</p> <p>e. These storage facilities must be on an impermeable surface that is protected from the ingress of stormwater from surrounding areas to ensure that accidental spillage does not pollute local soil or water resources. The Contractor shall submit a method statement to the Engineer / Project Manager and ECO for approval.</p> <p>f. Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site. Where possible and available, MSDSs must additionally include information on ecological impacts and measures to minimize negative environmental impacts during accidental releases or escapes.</p> <p>g. Staff dealing with these materials / substances must be aware of their potential impacts and follow the appropriate safety measures. The Contractor must ensure that its staff is made aware of the health risks associated with any hazardous substances used and has been provided with the appropriate protective clothing / equipment in case of spillages or accidents and have received the necessary training.</p> <p>h. Absorbent materials must be available at the construction site to clean any chemical, fuel or lubricant spills during construction. Empty packaging associated with the storage of hazardous chemicals, paints, solvents, lubricants (such as tins, 210 litre drums) is to be returned to the supplier where possible or alternatively be recycled (e.g. to a drum recycling company). If neither of these options is feasible then the packaging should be disposed</p> | | <p>Ongoing</p> |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
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| | <p>f. The use of pictures and real-life examples is encouraged as these tend to be more easily remembered.</p> <p>g. Use should be made of environmental awareness posters on site.</p> <p>h. No operator shall be permitted to operate critical items of mechanical equipment without having been trained by the Contractor and certified competent by the Project Management.</p> <p>i. All employees must undergo the necessary safety training and wear the necessary protective clothing at all times.</p> <p>j. The need for a “clean site” policy also needs to be explained to the construction workers.</p> | | |
| Worker conduct on site | | | |
| | <p>a. A general regard for the social and ecological well-being of the site and adjacent areas is expected of the site staff. Workers need to be made aware of the following rules:</p> <p>b. No alcohol / drugs to be present on site; no vehicles or machinery are to be operated whilst under the influence of alcohol or drugs.</p> <p>c. Prevent excessive noise to minimise disturbances to adjacent landowners.</p> <p>d. No firearms allowed on site or in vehicles transporting staff to / from the site (unless used by security personnel).</p> <p>e. No unsocial behaviour will be permitted.</p> <p>f. Bringing pets onto site is forbidden.</p> <p>g. Construction staff are to make use of facilities provided for them, as opposed to ad-hoc alternatives (e.g. fires for cooking, the use of surrounding bush as a toilet facility is strictly forbidden)</p> <p>h. No fires to be permitted on site. Encourage the use of</p> | PM / C / ELO | During staff induction, followed by ongoing monitoring |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY | |
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| | assist them in locating the Project Manager / Contractor, or provide them with a number on which they may contact the Project Manager / Contractor. | | | |
| | d. The conduct of the construction staff when dealing with the public or other stakeholders shall be in a manner that is polite and courteous at all times. Failure to adhere to this requirement may result in the removal of staff from the site by the Engineer. | | Ongoing monitoring | |
| | e. Adequate designated parking must be provided for site staff and visitors. | C / PM | Prior to moving onto site | |
| | f. A complaints register must be kept on site. I&APs need to be made aware of the existence of the complaints book and the method of communication available to them. Details of complaints must be incorporated into the audits as part of the monitoring process. | C / PM / ECO | Ongoing | |
| | Visual Impacts | | | |
| | a. Storage facilities, elevated tanks and other temporary structures on site must be located such that they have as little visual impact on local residents, tourists and motorists as possible. | PM / C / ECO | Ongoing – more frequently during dry and windy conditions | |
| | b. Lighting on the construction site must be pointed downwards and away from oncoming traffic and adjacent landowners. | PM / C / ECO | During set up and ongoing | |
| c. Special attention must be given to the screening of highly reflective materials on site. | PM / E / C / ECO | During site set up. | | |
| Dust / Air / Light Pollution Establishment of the camp site, and related temporary works can reduce air quality | a. Vehicles travelling along access roads must adhere to speed limits to avoid creating excessive dust. | PM / C | Throughout the duration of the project | |
| | b. Camp construction / haulage road construction – areas that have been stripped of vegetation must be dampened | ECO / C / E | During site set up | |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
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| | periodically to avoid excessive dust. c. The Contractor must make alternative arrangements (other than fires) for cooking and / or heating requirements. LPG gas cookers may be used provided that all safety regulations are followed. | PM / C | Throughout the duration of the project |
| Soil Erosion The stripping of vegetation during preliminary activities on site greatly increases the risk of soil erosion. | Conservation of Valuable Soil Resources a. Wind screening and stormwater control must be undertaken to prevent soil loss from the site. It is recommended that gabion mattresses are placed at culvert inlets and outlets as erosion control measures. b. Procedures that are in place to conserve topsoil during the construction phase of the project are to be applied to the set up phase, i.e. topsoil is to be conserved while providing access to the site and setting up the camp. c. Topsoil stripped from the construction camp and other construction areas must be stockpiled away from any potential disturbances. d. Stockpiled topsoil must be either vegetated or with indigenous grasses or covered with suitable fabric to prevent erosion and invasion by weeds. | E / PM / C / ECO | Throughout the duration of the project |
| Stormwater Serious financial and environmental impacts can be caused by unmanaged stormwater. | Stormwater Damage Prevention a. To prevent stormwater damage, the increase in stormwater runoff resulting from the construction activities must be estimated and the drainage system assessed accordingly. A drainage plan must be submitted to the Engineer for approval and must include the location and design criteria of any temporary stream crossings. b. During site establishment, stormwater culverts and drains are to be located and covered with metal grids to prevent blockages if deemed necessary by the Engineer. c. Temporary cut off drains and berms may be required to | E / ECO / PM E / PM ECO / E / PM | During surveys and preliminary investigations. During site establishment During site set |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
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| | capture storm water and promote infiltration. d. The stormwater drainage system must not be contaminated by other sources; therefore must be separated from other waste water drainage systems. The stormwater management plan must ensure that flow from the development does not result in negative impacts on downstream properties or watercourses. | E/ ECO / PM | up. During surveys and preliminary investigations. |
| Water Quality Incorrect disposal of substances and materials and polluted run-off can have serious negative effects on groundwater quality. | Maintenance of Water Quality a. Storage areas that contain hazardous substances must be bunded with an approved impermeable liner which can contain 110% of the storage tank capacity. b. Spills in bunded areas must be cleaned up, removed and disposed of safely from the bunded area as soon after detection as possible to minimise pollution risk and reduced bunding capacity. c. A designated, bunded area is to be set aside for vehicle washing and maintenance. Materials caught in this bunded area must be disposed of to a suitable waste disposal site or as directed by the Engineer. d. Provision must be made during set up for all polluted runoff to be treated to the Engineer's approval before being discharged into the stormwater system. Any waste which cannot be treated to acceptable standards on site must be treated and disposed by a licensed treatment company. | E / PM / ECO E / ECO / C / PM | During site set up. During site set up, to be monitored weekly |
| Conservation of the Natural Environment Alien plant encroachment is particularly damaging to natural habitats and is often | Flora and Fauna a. No vegetation may be cleared without prior permission from the Environmental Control Officer / Project Manager b. Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. | PM / ECO ECO / C / ELO | During site set up, and ongoing. Ongoing in camp site, haulage areas. |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
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| associated with disturbance to the soil during construction activities. Care must be taken to conserve existing plant and animal life on and surrounding the site considering the sites high ecological sensitivity | c. Monitoring of the site is required to identify any alien species that may establish within the servitude and adjacent areas. These alien species should be eradicated according to CARA. | | Ongoing monitoring |
| Set up of Waste Management | Waste Management | | |
| | a. The contractor is responsible for the internal collection of refuse and for transporting it to a registered landfill site once every week; unless a service agreement is entered into between the contractor and the local municipality. | C / ELO | During site set up |
| | b. The excavation and use of rubbish pits is forbidden. | PM / ECO / C | During site set up |
| | c. Burning of waste is forbidden ¹ . | | |
| | d. A fenced area must be allocated for waste sorting and storage prior to removal. | C / PM / ECO | During site set up and on going |
| e. Individual skips for different types of waste (e.g. 'household' type refuse, building rubble, etc.) must be provided. | | | |
| Cultural Environment | Protection of Cultural Environment / Heritage sites | | |
| | Prior to the commencement of construction, all staff needs to know what possible archaeological or historical objective of value may look like, and to notify the Engineer / Contractor should such an item be uncovered. If any artefacts or graves are uncovered during construction, all work on site is to cease and SAHRA as well as the ECO is to be notified for comment. | ECO / PM / C / ELO | During site set up and ongoing. |

¹ A possible exception to this may be that the alien invasive vegetation which is removed from the site should be burned to prevent the spread of the plants.

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
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| | Construction may only commence once approval by SAHRA is granted. | | |
| Safety and Security | Fencing / Demarcation | | |
| | a. Potentially hazardous areas such as trenches / storage areas are to be demarcated and clearly marked. | PM / C / ECO | Ongoing. |
| | Lighting | | |
| | a. Lighting on the construction campsite is to be set out to provide maximum security and to enable policing of the site, without creating a visual nuisance to local residents. | PM / C / ECO | Ongoing. |
| | Risks Associated with Materials on Site | | |
| | a. Material stockpiles or stacks, such as cables and other transmission line equipment must be stable and well secured to avoid possible injury to site workers / local residents. | PM / C / ECO | Ongoing. |
| | b. Flammable materials must be stored as far as possible from adjacent residents / businesses. | | |
| | c. Fire fighting equipment must be present on site at all times as per OHSA. | | |
| d. Obstruction to drivers' line of sight due to stockpiles and stacked materials must be avoided, especially at intersections and sharp corners. | | | |
| e. No materials are to be stored in unstable or high-risk areas such as in floodplains or on steep slopes. | | | |
| f. All I&APs must be notified in advance of any known potential risks associated with the construction site and the activities on it. Examples of these are stringing of power lines, blasting, earthworks / earthmoving machinery on steep slopes above houses / infrastructure, risk to residences along haulage roads / access routes. | | | |

It is important in the preconstruction phase that a list of all farms where construction will take place is attached to the EMPr along with land owner contact details. Sensitive properties must be highlighted and issues around those properties listed in details, such as game farms or those with livestock to assist contractors to manage construction adequately. Good practice such as respecting landowner’s property, safety and security of farmers. The removal and replacement of fencing must be well managed to curb loss of livestock.

12. CONSTRUCTION PHASE

This pertains to all environmental impacts associated with construction and is not limited to the land on which the Project is to be located. It includes the site footprint, construction campsites, access roads and tracks, as well as any other area affected or disturbed by construction activities. The EMPr (particularly the specifications for rehabilitation) is relevant for all areas disturbed during construction. Furthermore, the EMPr must take into account all secondary impacts on the local community and the public. *(It is recommended that any disturbances, which may take place, commence only after the first spring flush so that any indigenous vegetation can be relocated for rehabilitation.)*

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|---------------------------|---|-------------------|----------------------------|
| Access to the site | Maintenance of the access | | |
| | a. The access to the site will need to be upgraded to an acceptable standard during construction (i.e. such that large amounts of dust are not generated and there is no unwarranted damage caused to construction vehicles). | PM / E | Initial set up and ongoing |
| | b. Contractors shall ensure that access roads are maintained in good condition by attending to potholes, corrugations and stormwater damages as soon as these develop. | E / C / ELO / ECO | Establish at setup |
| | c. There needs to be adequate drainage of water underneath the access roads (both during construction & in operation). This can be done through a culvert / water diversion system. | PM / E / ECO | When necessary |
| | d. During construction, any dirt access roads could | PM / C | When necessary |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
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| | <p>potentially be surfaced with a compacted gravel layer (shale) in order to allow for the increase in vehicular traffic on these roads. A chemical stabilizer could be added to assist with the surface binding and reduce the dust produced by vehicular traffic on the road.</p> | | |
| | <p>e. Unnecessary compaction of soil by heavy vehicles must be avoided; construction vehicles must be restricted to demarcated access, haulage routes and turning areas.</p> | PM / C / ELO / ECO | Ongoing, and specifically after heavy rains |
| | <p>f. Machine / vehicle operators must receive clear instructions to remain within demarcated access routes. Movement of heavy-duty vehicles and vehicles not connected with work in progress must be restricted to the construction zone in order to control related impacts such as damage in the construction zone, compaction of soil, damage to vegetation and noise pollution</p> | ECO / C / ELO / PM | Ongoing, and specifically after heavy rains |
| | <p>g. Person and vehicle access must be restricted during construction so as to control access to otherwise potential dangerous excavations and materials.</p> | ECO / PM / C / ELO | Ongoing, and specifically after heavy rains |
| | Haulage Roads | | |
| | <p>a. Contractors shall ensure that all side and mitre drains as well as V Drains and scour check walls on access and haul roads are functioning properly and are well maintained.</p> | C / PM / E / ECO | Ongoing, and specifically after heavy rains |
| Maintenance of Construction Camp | Surfaces | | |
| | <p>a. The Contractor must monitor and manage drainage of the camp site.</p> | PM / C / ECO | Weekly inspection |
| | <p>b. Run-off from the camp site must not discharge into adjacent landowners' properties.</p> | | |
| | Ablutions / Sewage | | |
| | <p>a. Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas.</p> | PM / ECO / ELO | Ongoing |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|----------------------|--|--------------------|----------------------------|
| | b. The Contractor is to ensure that open areas or the surrounding bush are not being used as a toilet facility. | ELO / C / ECO | Weekly |
| | Camp Waste Disposal | | |
| | a. The Contractor shall ensure that all litter is collected from the work and camp areas daily. The construction area must be cleared of litter, debris (e.g. Cement packets, bitumen residues etc.) and other domestic waste on completion of the day's work. | PM / C / ELO / ECO | Ongoing |
| | b. Bins and / or skips must be emptied regularly and waste must be disposed of at a registered landfill site. Waybills for all such disposal are to be kept by the Contractor for review by the PM / ECO. | PM / C / ECO | Daily |
| | c. A registered chemical waste company is to be used to remove waste from chemical toilets on site. | PM / C / ELO / ECO | Weekly / As needed |
| | Eating Areas | | |
| | a. Eating areas must be regularly serviced and cleaned to ensure the highest possible standards of hygiene and cleanliness. | ELO / C | Weekly monitoring |
| | b. All litter throughout the site must be picked up on a daily basis and placed in the bins provided. | ELO / ECO / C | Daily / Ongoing monitoring |
| | Housekeeping | | |
| | a. The Contractor shall ensure that his camp and working areas are kept clean and tidy at all times. | C / ELO | Ongoing |
| Staff Conduct | Environmental Education and Awareness | | |
| | a. The Contractor must monitor the performance of the construction workers to ensure that the points relayed during their induction have been properly understood and are being followed. If necessary, the ECO and / or a translator should be called to the site to further explain aspects of environmental or social behaviour that are unclear. | C / ECO | Ongoing |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
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| | <p>Worker Conduct on Site</p> <p>a. A general regard for the social and ecological well-being of the site and adjacent areas is expected of the site staff. Workers need to be made aware of the following rules:</p> <p>b. No alcohol / drugs to be present on site; no vehicles or machinery are to be operated whilst under the influence of alcohol or drugs.</p> <p>c. Prevent excessive noise to minimise disturbances to local residents.</p> <p>d. No firearms allowed on site or in vehicles transporting staff to / from the site (unless used by security personnel).</p> <p>e. No unsocial behaviour will be permitted.</p> <p>f. Bringing pets onto site is forbidden.</p> <p>g. Construction staff are to make use of facilities provided for them, as opposed to ad-hoc alternatives (e.g. fires for cooking, the use of surrounding bush as a toilet facility is strictly forbidden)</p> <p>h. No fires to be permitted on site. Encourage the use of gas operated cookers for preparation of food on site</p> <p>i. Trespassing on private / commercial properties adjoining the site is forbidden</p> <p>j. Only <i>pre-approved</i> security staff and workers shall be permitted to live on the construction site.</p> <p>k. No worker may be forced to do work that is potentially dangerous or for what he / she is not trained to do.</p> <p>l. The staff conduct rules are described in a separate table of Rules (Annexure A of the EMPr). This is aimed at providing staff with the basic information regarding worker conduct on site</p> | PM / C / ELO / ECO | Ongoing |
| Dust / Air Pollution | <p>Dust & Air Pollution</p> <p>a. Vehicles travelling to and from the construction site must</p> | ECO / C / PM | As directed by |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
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| Main causes of air pollution are dust particles from vehicle movements and stockpiles, vehicle emissions and fires | adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site. | | Engineer / Project Manager |
| | b. Limiting construction operational hours from 07h00 and 17h00 will reduce congestion and disturbance in surrounding areas and minimize road deterioration and consequent dust creation. | ECO / C / PM | As directed by Engineer / Project Manager |
| | c. Access points and other cleared surfaces must be dampened whenever necessary and especially in dry and windy conditions to avoid excessive dust. | PM / C / ELO | Ongoing |
| | d. Vehicles and machinery are to be kept in good working order and to meet the manufacturer's specifications for safety, fuel consumption etc. Should excessive emissions be observed, the Contractor is to have the equipment seen to as soon as possible. | PM / C / ECO | Ongoing |
| | e. Stockpiles may cause dust and so must be managed in accordance with the guidelines in Materials Management. | PM / C / ELO | Ongoing |
| | f. If dust is unavoidable, screening will be required utilising wooden supports and shade cloth. | PM / C | Ongoing |
| | h. Dust must be suppressed on access roads and construction sites during dry periods by the regular application of water or a biodegradable soil stabilising agent | PM / C | Ongoing |
| | Soil Erosion | Topsoil Stripping and Stockpiling | |
| a. Excavated soil must be deposited in a landfill site. Soil disturbance will be minimized by establishing the extent of the construction site (pre-construction phase) and clearly demarcating this on the site layout plans. No construction personnel or vehicles may leave the demarcated areas except when authorised to do so by the Project Manager. | | PM / C / ECO | As each activity is completed. |
| b. Erosion prevention measures must be implemented: | | E / PM / C / ECO | Ongoing |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
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| | Berms, sand bags and hessian sheets may be used to contain all sediment whilst energy dissipaters must be constructed at all outflow points. | | |
| | Exposed Surfaces | | |
| | a. Side tipping of soil and excavated materials shall not be permitted – all spoil material shall be exposed of as directed by the Engineer. | E / C / PM | As directed by the Engineer / Project Manager |
| | b. Stormwater control and wind screening must be undertaken to prevent soil loss from the site. | E / ECO / PM / C | |
| | c. There must be no offsite impacts of stormwater. A general rule is that the stormwater velocity eddies on the site must be the same as the predevelopment area. | E / ECO / PM / C | |
| | d. In areas where steep slopes are excavated, erosion control measures need to be initiated and these may include seeding, brush packing and stone packing. | | |
| | e. Appropriate cambers and v-drains must be constructed on the access roads in order to dissipate surface water runoff and sheet erosion. | E / ECO / PM | |
| | f. The Storm Water Management Plan must be developed, provided and implemented by the Engineer. Drainage must be controlled to ensure that runoff from the access road will not lead to erosion and offsite pollution of any water resources along the road. The stormwater drainage system must not be contaminated by other waste sources generated during construction phases of the development. | PM / E / C / ECO | Ongoing and as directed by the Engineer / Project Manager |
| | g. The temporary toilet facilities must not be allowed to enter the storm water drainage system. Waste from these facilities must be collected by the service provider and disposed of at a permitted waste disposal site. These facilities must be regularly serviced and would be managed according to the service plan developed by the | | |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
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| | Engineer / Project Manager h. All embankments, unless otherwise directed by the Engineer, shall be protected by a cut off drain to prevent water from cascading down the face of the embankment and causing erosion. | E / C / ECO | Directed by the Engineer / Project Manager |
| Storm Water Construction activities frequently result in diversion of natural water flow resulting in concentration of flow and an increase in the erosive potential of the water | General Principles | | |
| | a. The Contractor shall not in any way modify nor damage the banks or beds of streams, rivers, wetlands, other open water bodies and drainage lines adjacent to or within the designated area, unless required as part of the construction project specification. Where such disturbance is unavoidable, modification of water bodies must be kept to a minimum in terms of: removal of riparian vegetation; and opening of the stream channel. | E / PM / ECO | As surface becomes exposed |
| | b. Earth, stone and rubble is to be properly disposed of so as not to obstruct natural pathways over the site. i.e. these materials must not be placed in stormwater channels, drainage lines or rivers. | E / PM / ECO / C | Regular monitoring Ongoing |
| | c. Stormwater outfalls must be designed to reduce flow velocity and avoid stream bank and soil erosion. | E / PM | |
| | d. The Contractor is to ensure that impediments to natural water flow is avoided during construction, or is temporarily diverted. | E / PM / ECO / C | |
| | e. There must be a periodic checking of the site's drainage system to ensure that the water flow is unobstructed. | | |
| | Un-channelled Flow | | |
| | a. During construction un-channelled flow must be controlled to avoid soil erosion. | PM / C / E / ECO | Ongoing monitoring |
| | b. Where surface runoff is concentrated (e.g. along exposed tracks), flow must be slowed by contouring. | E / ECO / PM | |
| | c. Rock Bolsters are to be placed across the invert of | PM / C / E / ECO | |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|--|---|--|---|
| | drains susceptible to erosion for every 2m vertical drop. | | |
| Water | Water Quality | | |
| | a. Every effort must be made to ensure that any chemicals or hazardous substances do not contaminate the soil or ground water on site. | PM / E / ECO | Ongoing monitoring / as the work progresses |
| | b. Care must be taken to ensure that runoff from vehicle or plant washing does not enter surface or ground water. Vehicles and machinery may only be cleaned at a designated place at the construction camp. | | |
| | c. Mixing / decanting of all chemicals and hazardous substances must take place either on a tray or on an impermeable surface. | PM / E / C | |
| | d. Contaminated wastewater must be managed by the site manager to ensure existing water resources on the site are not contaminated. All wastewater from general activities in the camp shall be collected and removed from the site for appropriate disposal at a licensed commercial facility. | PM / C / ECO | |
| | Water Supply | | |
| a. During heavy rainfall, when there is existence of water in adjoining riparian zones, the use of water for water provision is strictly prohibited. | PM / ECO / ELO | Ongoing | |
| b. Ensure that the existing potable water source is maintained for domestic use during construction. | ECO / ELO / PM | | |
| Conservation of the Natural Environment | Avifauna, Fauna and Flora | | |
| | a. The Contractor is to check that vegetation clearing has the prior permission of the PM / ECO. Vegetation that is removed is to be replanted and excavation is to be kept to a minimum. | ECO / PM / C | Ongoing monitoring / as the work progresses |
| b. Prevent construction of towers in ecologically sensitive areas, such as mountainous regions, wetlands / riparian zones, drainage lines, Inselbergs and koppies. | ECO / PM | As directed by Project manager ongoing | |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY | |
|---|---|------------------|---|--|
| | c. Remove and translocate succulent and other rare vegetation occurring within the footprint of the towers prior to construction. | ECO / PM / E | Ongoing along route alignment | |
| | d. Construct towers on disturbed areas as far as possible | E / C | Ongoing along route | |
| | e. Important Bird Areas are likely to be traversed by the powerline. Marking the earth wires of the powerline with suitable anti-collision making device must be determined. The avifauna's recommendations for marking areas must also be adhered to (post-construction phase) | ECO / PM / E | Ongoing monitoring / as the work progresses | |
| | f. Alien vegetation encroachment onto the site as a result of construction activities must be controlled during construction. Immediate re-vegetation of stripped areas and removal of aliens by weeding must take place. | | | |
| | Geology | | | |
| | a. In the event of excavation, the material that is removed must be separated into topsoil and subsoil. The top 150mm would be considered topsoil and must be stockpiled separately. | PM / C / ECO | Ongoing monitoring | |
| b. In the event of infilling, replacement of subsoil must precede the topsoil replacement, and all material must be well compacted. | | | | |
| Transmission Line on visual impact | a. Avoid crossing over or through ridges, rivers, wetlands or any natural features that have visual value. This also includes centres of floral endemism and areas where vegetation is not resilient and takes extended periods to recover. | PM / C / ECO / E | Ongoing during construction progresses | |
| b. The tower types used for the powerline should be the most permeable and create an extremely low degree of visual obstruction | | | | |
| c. Avoid changing the alignment's direction too often in | | | | |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|-----------------------------|--|------------------|----------------------|
| | order to minimise the use of the self-supporting strain tower. This tower type is the most visually intrusive as the steel lattice structure is more dense than other tower types, hence creating more visual obstruction | | |
| Materials Management | Stockpile Management | | |
| | a. Stockpiles must not be situated such that they obstruct natural water pathways. | PM / C / ECO | Ongoing monitoring |
| | b. Stockpiles must not exceed 2m in height unless otherwise permitted by the Engineer / Project Manager or be left for longer than 3 months. | PM / C / ECO / E | Ongoing monitoring |
| | c. If stockpiles are exposed to windy conditions or heavy rains, they must be covered either by vegetation or cloth, depending on the duration of the project. Stockpiles may further be protected by the construction of berms or low brick walls around their bases. | PM / C / E / ECO | Ongoing monitoring |
| | d. Stockpiles must be kept clear of weeds and alien vegetation growth by regular weeding. | | |
| | Handling of Hazardous Materials | | |
| | a. Cement, bitumen and other potential environmental pollutants must be mixed on an impermeable surface with special provisions for storm water management. | E / PM / C / ECO | Ongoing |
| | b. All empty containers must be removed from the site for appropriate disposal at a licensed commercial facility. | | |
| | c. No vehicles transporting concrete or bitumen to the site may be washed on site. | | |
| | d. Lime and other powders must not be mixed during excessively windy conditions. | | |
| | e. All substances required for vehicle maintenance and repair must be stored in sealed containers until they can be disposed of / removed from the site. | | |
| | f. Hazardous substances / materials are to be transported | | |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|--|---|--------------------|--|
| | in sealed containers or bags. g. Spraying of herbicides / pesticides must not take place under windy conditions and must comply with OHSA specs and other chemical handling laws. h. The Contractor is to outline a method statement for the dealing of accidents / spillages of hazardous materials. | | |
| Waste Management Definition; "Refuse" refers to all construction waste (such as rubble, cement, bags, timber, cans etc.) | On-site Waste Management | | |
| | a. The Contractor shall ensure that all refuse is collected from the camp and work areas daily. | PM / ECO / ELO / C | Monitored weekly |
| | b. All material used for construction and maintenance must be removed from the site after construction or maintenance work. | | Ongoing |
| | c. Refuse must be placed in the designated skips / bins which must be regularly emptied. These must remain within demarcated areas and must be covered to prevent wind-blown rubbish. | | |
| | d. In addition to the waste facilities within the construction camp, provision must be made for waste receptacles to be placed at intervals along the work front. | | |
| | e. Littering on site is forbidden and the site shall be cleared of litter at the end of each working day. | | |
| | f. Recycling is to be encouraged by providing separate receptacles for different types of waste and making sure that staff are aware of their uses. | | |
| | Waste Disposal | | |
| | Non – hazardous waste | | |
| | a. All waste must be removed from the site and transported to a registered landfill site. | ELO / PM / ECO | At least 24hours prior to the activity taking place. |
| b. Waybills proving disposal at each site shall be provided | PM / C / ECO | Ongoing | |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY | |
|--|---|---|----------------------|--|
| | by the Project Manager. | | | |
| | c. Any construction rubble shall be disposed of at registered disposal sites. | PM / C / ECO | | |
| | d. Waste from chemical toilets must be disposed of regularly and in a responsible manner by a registered waste contractor. Care must be taken to avoid contamination of soils and water, pollution and nuisance to adjoining areas. | PM / ECO / C | | |
| | Hazardous Waste | | | |
| | a. Contaminated water associated with construction activities must be contained in separate bermed areas and must not be allowed to enter into the natural drainage system. | PM / C / ECO | Ongoing | |
| | b. Chemical waste must be stored in appropriate containers and disposed of at licensed disposal facilities. | PM / C | | |
| | c. Soil that is contaminated with, e.g. cement, bitumen, petrochemicals or paint must be disposed of at a registered hazardous landfill site. | PM / ECO / C | Ongoing | |
| d. A sump must be created for concrete waste. This is to be de-sludged regularly and the cement waste is to be removed to a tip site as approved by the local authority. | E / PM / ECO | At least 24 hours prior to the activity taking place. | | |
| Social Impacts Regular communication between the Contractor and the I&APs is important for the duration of the contract. | Disruption of Infrastructure and Services | | | |
| | a. Contractors activities and movement of staff is to be restricted to designated construction areas. | PM / C | Ongoing | |
| | b. Should the construction staff be approached by members of the public or other stakeholders, they must assist them in locating the Engineer / Project Manager or Contractor, or provide a number on which they may contact the Project Manager or Contractor. | E / PM / C / ELO | Monthly | |
| | c. The conduct of the construction staff when dealing with | E / PM / C | | |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|-----------------------|---|--------------------|-----------------------|
| | the public or stakeholders shall be in a manner that is polite and courteous at all times. Failure to adhere to this requirement may result in the removal of staff from the site by the Project Manager. | | |
| | d. Disruption of access for local residents must be minimised and must have the consent of the Engineer / Project Manager. | E / PM / ECO | |
| | e. The Contractor is to inform adjacent landowners in writing of disruptive activities at least 24 hrs beforehand. This can take place by way of leaflets placed in the post boxes giving the Project Manager and Contractor's details or other method approved by the Project Manager. | PM / C / ECO / ELO | |
| | f. Drivers of construction vehicles must exercise care when travelling to and from the site specifically when travelling through villages – a maximum speed limit of 30 - 40km/h must be adhered to. Drivers of construction vehicles must be considerate of other road users. They are to be especially careful at narrow sections and water crossings or where livestock is being herded. | PM / C | Ongoing monitoring |
| Visual Impacts | | | |
| | a. Lighting on the construction site must be pointed downwards and away from oncoming traffic and nearby houses. | E / PM / ECO | Ongoing / As required |
| | b. The site must be kept clean to minimise the visual impact of the site. | PM / C / ECO | As required |
| | c. If screening is being used, this must be moved and re-erected as the work front progresses. | | |
| Noise | | | |
| | a. Machinery and vehicles are to be kept in good working order for the duration of the project to minimise noise nuisance to neighbours. | PM / C / ECO | Ongoing |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|-------------------------------------|--|--------------------|----------------------|
| | <p>b. Notice of particularly noisy activities must be given to residents adjacent to the construction site. Examples of these include: noise generated by jackhammers; blasting; drilling.</p> | | |
| | <p>c. Noisy activities must be restricted to the times given in the Project Specification or General Conditions of Contract.</p> | PM / C | |
| Communication with I&APs | | | |
| | <p>a. The Engineer and Contractor are responsible for ongoing communication with those people that are interested / affected by the project.</p> | PM / C / ECO / ELO | Ongoing |
| | <p>b. A complaints register must be housed at the site office. This must be in carbon copy format, with numbered pages. Any missing pages must be accounted for by the Contractor. This register is to be tabled during monthly site meetings.</p> | | |
| | <p>c. I&APs need to be made aware of the existence of the complaints book and the methods of communication available to them.</p> | | |
| | <p>d. Queries and complaints are to be handled by:</p> <ul style="list-style-type: none"> - documenting details of such communications; - submitting these for inclusion in the complaints register; - bringing issues to the Project Manager's attention immediately; and - taking remedial action as per Project Manager's instruction. | | |
| | <p>e. Selected staff is to be made available for formal consultation with I&APs in order to: explain the construction process; and answer questions.</p> | | |
| Cultural Environment | Protection of Cultural Environment / Heritage sites | | |
| | <p>a. Should any archaeological sites or items of historical</p> | ECO / PM / C | Ongoing |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|--|---|---|---|
| | <p>significance including old stone foundations, tools, clay ware, jewellery, remains, fossils, graves etc. be uncovered during construction, their existence must be reported to the ECO and SAHRA ,an archaeological study may be required.</p> <p>b. If any artefacts or graves are uncovered during construction, all work on site is to cease and SAHRA as well as the ECO is to be notified for comment. Construction may only commence once approval by SAHRA is granted.</p> | | |
| Safety and Security | Signage | C / PM | During site setup and as construction progresses. |
| | <p>a. Any potentially hazardous areas such as excavated trenches/pits or chemical storage areas are to be demarcated and clearly signed in English and Afrikaans. Sidewall protection (e.g. shoring) to be erected for deep trenches as per the requirements of the Occupational Health and Safety Act of South Africa (OHSA).</p> | | |
| | Risks Associated with Materials on Site | C / ECO / PM | Ongoing |
| | <p>a. Fire fighting equipment must be present on site at all times.</p> | | |
| | <p>b. No materials are to be stored in unstable or high-risk areas such as in floodplains or on steep slopes</p> | | Ongoing with monitoring |
| | General Safety | C / PM | Ongoing |
| <p>a. The construction camp is to be securely fenced and locked when not in use. No unauthorised access is to be allowed to members of the public and people not associated with the construction process.</p> | | | |
| <p>b. Construction personnel to be issued with suitable PPE (e.g. safety shoes, hard hats) free of charge and PPE for construction areas are to be defined prior to the activity commencing.</p> | | Before any construction or earthmoving activities occur | |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|----------|---|----------------|----------------------------------|
| | | | and ongoing during construction. |
| | c. All procedures and equipment on site must be used in accordance with the occupational Health and Safety Act regulations of South Africa (OHSA), Act No. 85 of 1993). | | Ongoing |

13. POST-CONSTRUCTION PHASE

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|--------------------------|---|----------------|----------------------|
| Construction Camp | Construction Camp Rehabilitation | PM / C / ECO | Project completion. |
| | a. All structures comprising the construction camp are to be removed from site. | | |
| | b. The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint and fuels, etc. and these must be cleaned up. | | |
| | c. All hardened surfaces within the construction camp area must be ripped, all imported materials removed, and the area shall be top-soiled. | | |
| | d. The Contractor must arrange the cancellation of all temporary services. | | |
| Avifauna | Avifaunal impacts mitigation | PM | Project completion |
| | Mark the line with anti-collision marking devices on the earth wire to increase the visibility of the line and reduce likelihood of collisions. Marking devices should be spaced 10m apart. | | |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|---|--|------------------|----------------------|
| | The sections of line that pose a concern and require marking are to be finalised by EWT in an “avifaunal walkthrough” once final route is decided and towers/pylons pegged. | | |
| Vegetation | Landscaping | | |
| | a. All disturbed areas or areas which have been engineered for the purpose of the development are to be rehabilitated with indigenous vegetation which must be sourced from surrounding areas where possible. This will aid in preventing erosion within the site. | E / PM / C / ECO | Project completion. |
| | Tower footprint area | | |
| | a. Rehabilitate disturbed areas around tower footprint as soon as practically possible after construction. This should be done to restrict extended periods of exposed soil. | PM / C / ECO | Project completion. |
| Land Rehabilitation | Land Rehabilitation | | |
| | a. Excavated soil and soil disturbance – excavated soil not used in the development must be disposed of in a landfill site. Soil disturbance will be minimized by establishing the extent of the construction site (pre-construction) and clearly demarcated in on-site layout plans. No construction personnel or vehicles may leave the demarcated areas except when authorized to do so by the Project Manager. | E / PM / C / ECO | Project completion. |
| | b. Rehabilitation must be executed in such a manner that surface runoff will not cause erosion of disturbed areas during and after rehabilitation. | | |
| | c. All areas to be vegetated that comprise surfaces hardened due to construction activities are to be ripped and imported material thereon removed. | PM / C / ECO | |
| d. All rubble is to be removed from the site to an appropriate disposal site as approved by the Project | | | |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|-------------------------------------|--|------------------------|--------------------------|
| | Manager. Burying of rubble on site is prohibited. | | |
| | e. The site is to be cleared of all litter. | E / PM / C / ECO / ELO | |
| | f. All embankments are to be trimmed, shaped and re-planted to the satisfaction of the Engineer. | | |
| | g. Surfaces are to be checked for waste products from activities such as concreting or asphaltting and cleared in a manner approved by the Project Manager. | | |
| | h. All trimmed and / or compacted areas must be left rough to facilitate binding of topsoil and vegetation. | PM / C | |
| | i. The Contractor is to check that all watercourses are free from building rubble, spoils materials and waste materials. | PM / C / ECO | |
| Materials and Infrastructure | Removal of Barriers, Remediation of Damage | | |
| | a. All material used for construction and maintenance of the Transmission Line must be removed from site after construction / maintenance. | PM / C / ECO | As completed |
| | b. All leftover construction materials must be removed from the site. | PM / C / ECO | On completion |
| | c. The Contractor must repair any damage that the construction works has caused to adjacent areas. | PM / C / ECO | Continually as necessary |
| | d. Fences, barriers and demarcations associated with the construction phase are to be removed from the site unless stipulated otherwise by the Project Manager. | PM / E / C | On completion |
| | e. All residual topsoil stockpiles must be removed to registered landfill sites or spread on site as directed by the Engineer / Project Manager. | | |
| | f. All areas where temporary services were installed are to be rehabilitated to the satisfaction of the Project Manager and ECO. | PM / E / ECO / C | |
| General | General Remediation | | |
| | a. Temporary road works must be closed and access across these blocked. | E / PM / C / ECO | On completion of the |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|----------|--|----------------|-------------------------------------|
| | b. A meeting is to be held on site between the Project Manager, Environmental Control Officer and the Contractor to approve all remediation activities and to ensure that the site has been restored to a condition approved by the Engineer / Project Manager and ECO. | | construction and maintenance phases |

14. ENVIRONMENTAL AUDIT

An Environmental Audit of the ECO Process and documentation compiled by the ECO must be conducted by an independent qualified auditor. This should be carried out at the end of the rehabilitation phase. The Independent auditor must seek to qualify the following roles expected of the ECO.

On-site Environmental Management for each project which will be guided by the existing Environmental Authorisation (EA), Environmental Management Programme (EMPr) and Land Owner conditions. The role of the ECO would be to ensure implementation and compliance with these existing documentation and their respective conditions.

Interested and affected parties, as listed in the register for the EIA (If conducted) must be informed of the date of commencement of construction activities and an Access Plan must be negotiated between landowner, adjacent land owners and the contractor. This plan must be communicated to all parties through the Independent ECO whose role is to ensure that the mitigation and rehabilitation measures listed in the EA are implemented and to ensure compliance with the approved EMPr.

An Induction for the contractor and employees will be conducted by the ECO prior to any construction work in which environmental awareness will be communicated to provide them with a basic understanding of the environment they are working in. The workers will also be informed of Eskom's site requirements, safety and health procedures.

Communication pertinent to all Environmental Management tasks will be the responsibility of the ECO who will thus assist in conflict resolution and to measure and evaluate damage to adjacent land owners properties for timeous and equitable settlement of claims.

Preconstruction and construction phase measures, as contained in the approved EMPr will be communicated and monitored once construction commences. Demarcation of sensitive areas will precede and construction activity. The day to day tasks of the appointed ECO will include enforcing specific conditions as contained in the EA document. The ECO will keep a daily record of all activities in the form of a register, and all documentation related to monitoring and auditing must be kept on site.

Monthly reports to the Land and Rights Project manager on the compliance of the contractor will be submitted at the end of each month. The reports will include before and after photographs with specific dates of any incidents identified on site and mitigation measures carried out thereof. The ECO shall also monitor the Environmental Officer's (EO) complaints register, records of environmental incidents. Other tasks include recommending modifications to the EMPr as when site conditions require. These changes must be communicated to all parties.

The ECO must also ensure necessary permits and disposal certificates were obtained and kept on site before regulated activities take place. Once the Construction phase is concluded the ECO must prepare the contractor for rehabilitation as per measures contained in the approved EMPr. The ECO will ensure that all rehabilitation measures are implemented and adhered to.

At the conclusion of the rehabilitation phase the ECO will submit all registers, schedules and reports to the Department of Compliance and Monitoring. The applicant will be required to submit an audit within 30 days of the construction and rehabilitation activities in terms of compliance with the EA and EMP conditions.

Beyond submission of an audit, 14 days written notice must be given to the department before the operation phase of the activity can commence.

15. OPERATIONAL PHASE

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|--|---|--------------------|----------------------|
| Vegetation / Landscape Management | <p>a. All rehabilitated areas will need to be maintained and re-seeded with local indigenous vegetation where necessary on a regular basis.</p> | Eskom Transmission | Ongoing |
| Transmission Line - Minimise Avifauna impacts | <p>a. Install Bird Guards on towers on the lines, as per Eskom Transmission Guidelines. This should deter birds from perching in the high risk areas of towers.</p> | | |
| <p>b. Avifauna walk through is required to identify towers requiring Bird Guards (also during post-construction phase).</p> | | | |
| <p>c. Should any breeding sites be encountered, activity in the vicinity of the site must be halted and the Endangered Wildlife Trust (EWT) must be consulted for further advice.</p> | | | |
| <p>d. The nests must be left alone as far as possible</p> <p>Nests should be monitored closely and if they begin to pose problems then EWT should be consulted for recommendations on how best to manage them.</p> <p>Nest management recommendations may include nest</p> | | | |

| ACTIVITY | MANAGEMENT / MITIGATION | RESPONSIBILITY | SCHEDULE / FREQUENCY |
|-------------------------------------|---|----------------|----------------------|
| | removal in cases where no other species are breeding on the same nest, for example Pygmy Falcons and assorted other raptors. | | |
| Storm Water Management | a. All stormwater attenuation measures must be monitored on an annual basis through a general environmental audit. | | |
| Solid Waste / Refuse Removal | <p>a. Waste removal generated through maintenance must be undertaken by the Local Municipality waste removal services as and when required. However, the following measures must form part of the general management of the site:</p> <p>Monitoring of solid waste removal</p> <p>Disposal of hazardous substances (i.e. paint) in an approved manner.</p> | | |
| Sewerage | a. Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company. | | |

16. DECOMMISSIONING PHASE

The objective of providing guidelines during the decommissioning phase is to prevent structures from being left to deteriorate and look unsightly. It is imperative that non-functional structures be removed as soon as possible, and that the site is rehabilitated as soon as possible. If non-functional structures are not needed anymore, and not removed, it must be maintained that they will be used to prevent the environmental degradation of the site.

Eskom Holdings SoC Limited is responsible for ensuring the Perseus-Gamma 765kV transmission powerline is properly maintained at all times.

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ANNEXURE A

STAFF CONDUCT CONTROL AND INFORMATION SHEET

| | |
|----|---|
| | <u>ALL STAFF MUST OBEY THE FOLLOWING RULES:</u> |
| 1 | DO NOT leave the construction site untidy and strewn with rubbish that will attract animal pests. |
| 2 | DO NOT bring your pets to the construction site. |
| 3 | DO NOT trespass on private properties not linked to the project. |
| 4 | DO NOT carry a weapon on the construction site or in the vehicles transporting workers to and from the construction site. |
| 5 | DO NOT set fires unnecessarily. |
| 6 | DO NOT cause any unnecessary disturbing noise at the construction camp/site or at any designated worker collection/drop off points. |
| 7 | DO NOT drive a construction-related vehicle under the influence of alcohol. |
| 8 | DO NOT exceed the national speed limits on public roads or exceed the recommended speed limits in this management plan (where applicable) whilst driving a construction vehicle. |
| 9 | DO NOT drive a vehicle that is generating excessive noise (noisy vehicles must be reported and repaired as soon as possible). |
| 10 | DO NOT litter along the roadsides, including both public and private roads. |
| 11 | DO NOT remove or destroy vegetation at the construction camp/construction site without the prior consent of the Project Manager and Environmental Control Officer. |
| 12 | DO NOT tamper with, destroy or remove vegetation from any areas that have been fenced off or marked. |

ANNEXURE B1 (SAMPLE)

DECLARATION OF UNDERSTANDING BY THE DEVELOPER

I, _____

Representing _____

Declare that I have read and understood the contents of the Environmental Management Programme for: THE PROPOSED PERSEUS-GAMMA 765kV TRANSMISSION POWERLINE AND SUBSTATIONS UPGRADE (**DEA REF: 14/12/16/3/3/2/356**)

Contract _____

I also declare that I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications for the aforementioned Contract.

Signed: _____

Place: _____

Date: _____

Witness 1: _____

Witness2: _____

ANNEXURE B2 (SAMPLE)

DECLARATION OF UNDERSTANDING BY THE PROJECT MANAGER

I, _____

Representing _____

Declare that I have read and understood the contents of the Environmental Management Programme for: **THE PROPOSED PERSEUS-GAMMA 765kV TRANSMISSION POWERLINE AND SUBSTATIONS UPGRADE (DEA REF: 14/12/16/3/3/2/356)**

Contract _____

I also declare that I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications for the aforementioned Contract.

Signed: _____

Place: _____

Date: _____

Witness 1: _____

Witness2: _____

ANNEXURE B3 (SAMPLE)

DECLARATION OF UNDERSTANDING BY THE CONTRACTOR

I, _____

Representing _____

Declare that I have read and understood the contents of the Environmental Management Programme for: THE PROPOSED PERSEUS-GAMMA 765kV TRANSMISSION POWERLINE AND SUBSTATIONS UPGRADE (**DEA REF: 14/12/16/3/3/2/356**)

Contract _____

I also declare that I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications for the aforementioned Contract.

Signed: _____

Place: _____

Date: _____

Witness 1: _____

Witness2: _____

ANNEXURE B4 (SAMPLE)

DECLARATION OF UNDERSTANDING BY THE ENVIRONMENTAL CONTROL OFFICER

I, _____

Representing _____

Declare that I have read and understood the contents of the Environmental Management Programme for: THE PROPOSED PERSEUS-GAMMA 765kV TRANSMISSION POWERLINE AND SUBSTATIONS UPGRADE (**DEA REF: 14/12/16/3/3/2/356**)

Contract _____

I also declare that I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications for the aforementioned Contract.

Signed: _____

Place: _____

Date: _____

Witness 1: _____

Witness2: _____

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ANNEXURE C1 (SAMPLE)

METHOD STATEMENT: **Solid Waste Management**

CONTRACT:.....

DATE:.....

WHAT WORK IS TO BE UNDERTAKEN? [give a brief description of the works to be undertaken on site that will generate waste (hazardous and non-hazardous wastes)]: *
Note: please attach extra pages if more space is required.

*Insert additional pages as required

WHERE ARE THE WORKS TO BE UNDERTAKEN? (where possible, provide an annotated plan and a full description of the extent of the works): * Note: please attach extra pages if more space is required

*Insert additional pages as required

METHOD STATEMENT: Solid Waste Management (contd.)

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:.....

End

Date:.....

HOW IS WASTE TO BE MANAGED ON SITE? (provide as much detail as possible, including annotated sketches and plans where possible): * Note: please attach extra pages if more space is required

DRAFT

***Insert additional pages as required**

DRAFT

DECLARATIONS for Method Statement

Solid Waste Management (contd.) (SAMPLE)

1) ENGINEER

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

(Signed)

(Print name)

Dated: _____

2) ECO

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

(Signed)

(Print name)

Dated: _____

3) CONTRACTOR

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

(Signed)

(Print name)

Dated: _____

ANNEXURE C2 (SAMPLE)**METHOD STATEMENT:****Topsoil Management****CONTRACT:**.....**DATE:**.....

WHAT WORK IS TO BE UNDERTAKEN? (give a brief description of the works to be undertaken that require topsoil to be stripped): * Note: please attach extra pages if more space is required

*Insert additional pages as required

WHERE ARE THE WORKS TO BE UNDERTAKEN? (where possible, provide an annotated plan and a full description of the extent of the works): * Note: please attach extra pages if more space is required

*Insert additional pages as required

METHOD STATEMENT:

Topsoil Management (contd.)

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:.....
Date:.....

End

HOW ARE TOPSOIL STOCKPILES TO BE MANAGED? (provide as much detail as possible, including annotated sketches and plans where possible): * Note: please attach extra pages if more space is required

DRAFT

***Insert additional pages as required**

DRAFT

DECLARATIONS for Method Statement

Topsoil Management (contd.) (SAMPLE)

1) ENGINEER

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

(Signed)

(Print name)

Dated: _____

2) ECO

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

(Signed)

(Print name)

Dated: _____

3) CONTRACTOR

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

(Signed)

(Print name)

Dated: _____

ANNEXURE C3 (SAMPLE)

METHOD STATEMENT:

Fuel Management

CONTRACT:.....

DATE:.....

WHAT WORK IS TO BE UNDERTAKEN? (give a brief description of the works): * Note: please attach extra pages if more space is required

*Insert additional pages as required

WHERE ARE THE WORKS TO BE UNDERTAKEN? (where possible, provide an annotated plan and a full description of the extent of the works): * Note: please attach extra pages if more space is required

*Insert additional pages as required

METHOD STATEMENT:

Fuel Management (contd.)

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:.....
Date:.....

End

HOW ARE THE WORKS TO BE UNDERTAKEN? (provide as much detail as possible, including annotated sketches and plans where possible): * Note: please attach extra pages if more space is required

DRAFT

***Insert additional pages as required**

DRAFT

DECLARATIONS for Method Statement**Fuel Management (contd.)** (SAMPLE)**1) ENGINEER**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

(Signed)_____
(Print name)

Dated: _____

2) ECO

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

(Signed)_____
(Print name)

Dated: _____

3) CONTRACTOR

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

(Signed)_____
(Print name)

Dated: _____

ANNEXURE C4 (SAMPLE)

METHOD STATEMENT:**Rehabilitation of Crew Camps and Other Disturbed Areas****CONTRACT:**.....**DATE:**.....

WHAT WORK IS TO BE UNDERTAKEN? (give a brief description of works to be undertaken that may result in the need for rehabilitation of the affected areas): * Note: please attach extra pages if more space is required

*Insert additional pages as required

WHERE ARE THE WORKS TO BE UNDERTAKEN? (where possible, provide an annotated plan and a full description of the extent of the works): * Note: please attach extra pages if more space is required

*Insert additional pages as required

METHOD STATEMENT:

Rehabilitation of Crew Camp and Other Disturbed Areas (contd.)

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:.....

End

Date:.....

HOW ARE THE REHABILITATION WORKS TO BE UNDERTAKEN? (provide as much detail as possible, including annotated sketches and plans where possible): * Note: please attach extra pages if more space is required

***Insert additional pages as required**

DRAFT

DECLARATIONS for Method Statement**Rehabilitation of Crew Camp and Other Disturbed Areas (contd.)**

(SAMPLE)

1) ENGINEER

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

(Signed)_____
(Print name)

Dated: _____

2) ECO

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

(Signed)_____
(Print name)

Dated: _____

3) CONTRACTOR

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

(Signed)_____
(Print name)

Dated: _____

ANNEXURE D (SAMPLE)
INCIDENT AND ENVIRONMENTAL LOG

| ENVIRONMENTAL INCIDENT LOG | | | | |
|-----------------------------------|-----------------------|--|---|------------------|
| Date | Env. Condition | Comments <i>(Include any possible explanations for current condition and possible responsible parties. Include photographs, records etc. if available)</i> | Corrective Action Taken <i>(Give details and attach documentation as far as possible)</i> | Signature |
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