

Eskom Nokeng Fluorspar substation and 132kV line

DEA Ref nr 12/12/20/2528

NEAS Ref DEA/EIA/0000671/2011

Basic Assessment Report

Appendix F: Environmental Management Programme

Compiled December 2011

1. DETAILS OF THE PROPOSED ACTIVITIES

Eskom Distribution Northern Region (the Applicant) commissioned Texture Environmental Consultants (the Environmental Assessment Practitioner) to undertake an Environmental Impact Assessment for the proposed project.

Nokeng Fluorspar Mine (Pty) Ltd (Nokeng Fluorspar), has applied to Eskom Distribution Northern Region for the supply of electricity to a proposed mining operation. This application concerns a substation and powerline to facilitate the supply of power to the mine.

The construction of the Nokeng Fluorspar substation and the associated powerline entail the following:

- Build an approximately **15km 132kV Kingbird line** from the existing Rust de Winter Substation to the proposed Nokeng Fluorspar substation;
- Establish the 2x40 MVA **Substation** (to be called Nokeng Fluorspar) on a terrain of 200x200m;
- Erect a 36 meters Communication Tower inside the new substation;
- Construct an access/ construction road of 8 meters wide for the line and substation;
- Obtain a servitude area of 31metres wide for the power line route.

The applicant is Eskom Distribution Northern Region, Land Development with contact person Ms. Nkateko Msimango, Environmental Management in Polokwane.

1.1 Locality and Regional Context

Two alternative routes are considered for the line. The affected properties for **alternative 1** are the farms **Buffelsdrift 179JR Portion 35, 3 and 37; Rust de Winter 178JR Portion 15 and 0; Rust de Winter 180JR Portion 23, 29, 193, 213, 188, 187, 214, and 0;** and **Kromdraai 209JR Portion 3, 2 (Re) and 11** in the Bela-Bela Local Municipality in Limpopo Province and in the Nokeng tsa Tsaemane Local Municipality in Gauteng Province. The affected properties for **alternative 2** are the farms **Buffelsdrift 179JR Portion 35, 3 and 37; Rust de Winter 178JR Portion 5, 6, 15 and 0; Rust de Winter 180JR Portion 23, 29, 213, 188, 211, and 0;** and **Kromdraai 209JR Portion 5, 3, 2 (Re) and 11** in the Bela-Bela Local Municipality in Limpopo Province and in the Nokeng tsa Tsaemane Local Municipality in Gauteng Province.

The study area is situated on the 1:50 000 topographical base maps 2528AB, 2528AD, 2528BA and 2528BC. The alternatives for the project are found at approximately:

1.2 Legal Framework

An application for environmental authorisation is submitted to the National Department of Environmental Affairs (DEA) in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), read with the Environmental Impact Assessment Regulations, 2010 (GNR 543 of 2010) (EIA Regulations).

The following activities as listed in GNR 544 and 546 of 2010 were identified as applicable to the proposed construction of the powerline and substation:

Relevant notice:	Activity No:	Description of each listed activity as per project description:
R 544 of 18 June 2010	10	The construction of facilities or infrastructure for the distribution of electricity outside urban areas with a capacity of 132kV.
R 544 of 18 June 2010	23	The transformation of undeveloped land to institutional use, outside an urban area, where the total area to be transformed is bigger than one hectare for the purpose of a substation.
R 546 of 18 June 2010	3	The construction of a telecommunication tower where the mast: (a) is to be placed on a site not previously used for this purpose, and (b) will exceed 15 meters in height. (activity to be confirmed)
R 546 of 18 June 2010	4	The construction of an access and construction road wider than 4 meters. (activity to be confirmed)

2. OBJECTIVES OF THE EMPr

The Environmental Management Programme has the following objectives:

- To state the standards and guidelines which Eskom will be required to adhere to in terms of environmental legislation;
- To set out the mitigation measures and environmental specifications which Eskom will be required to implement for the construction phase of the project in order to minimize the extent of environmental impacts, and where possible to improve the condition of the environment;
- To provide guidance regarding the method statements which Eskom will be required to compile and implement to achieve the environmental specification;
- To define corrective actions which Eskom must take in the event of non-compliance with the specifications of this EMPr;
- To mitigate potential negative impact associated with the project and ensure optimising of positive impact;
- To prevent long-term or permanent environmental degradation;
- To ensure that the Applicant, construction workers and the operational and maintenance staff are well acquainted with their responsibilities in terms of the environment;
- To ensure that communication channels to report on environment related issues are in place.

3. DETAILS OF THE PERSON WHO PREPARED THE EMPr

This Environmental Management Programme was prepared by Texture Environmental Consultants. Ria Pretorius is the principal member of Texture. Texture has significant experience and is well equipped and qualified to undertake Environmental Impact Assessments and inclusive thereof Environmental Management Programmes.

Texture has access to a variety of skills through association with specialists in their different fields of expertise. These specialist fields include the following: ecologists; archaeologists; architects & historical architects; agricultural specialists; geotechnical engineers; geohydrologists; civil and electrical engineers and social consultants as well as landscapers and contractors. Texture has a broad client base, developed over years of professional services supplied, from both private and government sectors. A company profile is available on request.

4. DETAILS OF PERSONS RESPONSIBLE FOR IMPLEMENTATION OF THE EMPr

The following undertaking must be filled out and signed by the applicant and forwarded to DEA prior to commencement of construction:

AGREEMENT & UNDERTAKING OF THE APPLICANT

I hereby confirm and state that I am aware of the contents of the Environmental Management Programme and the conditions of the Environmental Authorisation and shall comply with all legislation pertaining to the nature of the work to be done and all things accidental thereto.

Signed on behalf of _____

Date : _____

Place : _____

Signature : _____

Full Name : _____

Postal Address : _____

Physical Address : _____

Office Telephone Number : _____

AGREEMENT & UNDERTAKING OF THE ECO

The following details of the ECO must be filled out, signed and forwarded to DEA prior to construction:

Company Name : _____

Contact Person(s) : _____

Physical Address : _____

Street Address : _____

Office Telephone Number : _____

Cellular phone Number : _____

Fax Number : _____

5. PROPOSED MECHANISM FOR COMPLIANCE

Key impacts generally associated with Eskom construction activities, as confirmed during the course of the Environmental Impact Assessment process are:

- Risk of erosion
- Impact on natural habitat
- Risk of Surface and Groundwater Pollution
- Visual Impact
- Impact on safety and Security
- Impact on agriculture
- Impact on birds
- Social Impact
- Impact of influx of labourers to the area
- Impact of solid waste
- Impact on cultural heritage resources
- Introduction of alien vegetation

Specifications and conditions are hereby provided to limit and/or prevent impact on these components during all the phases of project development, namely

- Specifications applicable to all Phases of Project Development
- Design & Pre-construction Phase
- Construction Phase
- Post-construction & Operational Phase

6. SPECIFICATIONS APPLICABLE TO ALL PHASES OF PROJECT DEVELOPMENT

Roles and Responsibilities

Eskom

Eskom is the applicant for the project. Eskom will therefore, be the entity monitoring the implementation of the EMPr. The Contractor who wins the tender for the construction, will, in terms of the tender documentation, be responsible to implement the proposed mitigation measures in this EMPr on Eskom's behalf.

Eskom will:

- Be responsible for the overall implementation of the EMPr in accordance with the requirements of the environmental authorization, issued by DEA.
- Ensure that all third parties who carry out all or part of Eskom's obligations under the Contract comply with the requirements of this EMPr.

Environmental and Health Training and Awareness

Eskom will ensure that its employees are adequately trained with regard to the implementation of the EMPr, as well as regarding environmental legal requirements and obligations. All employees should have an induction presentation on environmental awareness. Where possible the presentation will be conducted in the language of the employees. The environmental training should, as a minimum, include the following:

- The importance of conforming with all environmental policies, procedures, plans and systems;
- The significant environmental impacts, actual or potential, which could result from their work activities;
- The environmental benefits of improved personal performance;
- The roles and responsibilities in achieving conformance with the environmental policy and procedures, including emergency preparedness and response requirements;
- The potential consequences of departure from specified operating procedures;
- The mitigation measures to be implemented when carrying out their work activities;
- The importance of not littering;
- The need to use water sparingly;

- Details of, and encouragement to, minimizing the production of waste and re-use, recover and recycle waste where possible;
- Details regarding archaeological and/or historical sites which may be unearthed during construction, and the procedures to be followed should these be encountered;
- The procedures which should be followed should a grave be encountered or unearthed during the construction phase;
- Details regarding flora and fauna of special concern, including protected/endangered plant and animal species, and the procedures to be followed should these be encountered during the construction phase.

Emergency Preparedness

Eskom's environmental emergency procedures ensure that there will be an appropriate response to unexpected or accidental actions or incidents that will cause environmental impacts, throughout the life cycle of the project. Such incidents may include, inter alia:

- Accidental discharges to water and land;
- Accidental exposure of employees to hazardous substances;
- Accidental veld fires;
- Accidental spillage of hazardous substances;
- Specific environmental and ecosystem effects from accidental releases or incidents.

The emergency preparedness plan

- Construction employees shall be adequately trained in terms of incidents and emergency situations.
- An emergency preparedness plan will include details of the organization (manpower) and responsibilities, accountability and liability of personnel.
- The emergency preparedness plan shall include a list of key personnel.
- Details of emergency services (e.g. the fire department, spill clean-up services, etc.) shall be listed.
- Internal and external communication plans, including prescribed reporting procedures shall be listed.
- Actions to be taken in the event of different types of emergencies shall be included.
- Information on hazardous materials, including the potential impact associated with each, and measure to be taken in the event of accidental release shall be listed.
- Training plans, testing exercises, and schedules for effectiveness shall be included.
- Eskom will comply with the emergency preparedness, and incident and accident-reporting requirements, as required by the Occupational Health and Safety Act, 1993 (Act No 85 of 1993), the National Environmental Management Act, 1998 (Act No 107 of 1998) as amended, the National Water Act, 1008 (Act No 36 of 1998) and the National Veld and Forest Fire Act, 1998 (Act No 101 of 1998) as amended, and/or any other relevant legislation.

Spillages

- Streams, rivers and dams will be protected from direct or indirect spillage of pollutants such as refuse, garbage, cement, concrete, sewage, chemicals, fuels, oils, aggregate, wash water, organic materials and bituminous products.
- In the event of a spillage during the construction phase, the responsibility for spill treatment will be with Eskom and Eskom will be liable to arrange for competent assistance to clear the affected area.
- Eskom will compile and maintain environmental emergency procedures, to ensure that there will be an appropriate rapid response to unexpected or accidental environmental related incidents throughout the life cycle of the project.
- The individual responsible for, or who discovers a hazardous waste spill must report the incident to the Engineer.
- The Engineer will assess the situation in consultation with the SECO and act as required in all cases, the immediate response will be to contain the spill. The exact treatment of pollutes soil/water will be determined by die Engineer in consultation with the SECO. Areas cleared of hazardous waste will be re-vegetated.
- Should water downstream of the spill be polluted, and fauna and flora show signs of deterioration or death, specialist hydrological or ecological advice must be sought for appropriate treatment and remedial procedures to be followed. The costs of containment and rehabilitation will be for Eskom's account, including the costs of specialist input.

During an emergency situation, the following will apply

- No person shall be allowed to approach a spill unless he/she is equipped with the personal protective clothing.

- The risk involved shall be assessed before anyone approaches the scene of the incident with the emergency response plan.
- A written report shall be forwarded to the relevant environmental authority within 24 hours of the incident.
- Any known or discovered spillage of toxic substances into a stream or river should be followed by immediate monitoring of the receiving streams and rivers.

Fires

- The adjacent landowners will be informed and/or involved in case of any fire.
- It must be ensured that the basic fire fighting equipment is supplied to all living quarters, site offices, kitchen areas, workshop areas and stores.
- Welding gas cutting or cutting of metal will only be allowed inside the working/demarcated areas and with appropriate fire fighting equipment at hand.

Checking and Corrective Action

Non-compliance

Non-compliance with the specifications of the EMPr constitutes a breach of Contract for which Eskom must be immediately notified accordingly. Eskom will be deemed not to have complied with the EMPr if;

- There is evidence of contravention of the EMPr specifications within the boundaries of the construction site, site extensions and access roads;
- There is contravention of the EMPr specifications which relate to activities outside the boundaries of the construction sites;
- Environmental damage ensues due to negligence;
- Construction activities take place outside the defined boundaries of the site;
- Eskom fails to comply with corrective or other instruction.
- Non-compliance will be dealt with in terms of the contract documentations signed by the various parties.

Monitoring

Monitoring will be undertaken as and when required. Any incidents that might have a detrimental impact on the environment will be investigated and the environmental monitoring will be conducted. Complaints received will be checked through verifiable monitoring.

Inspections

Ongoing visual inspections will be conducted daily by the SECO. The SECO will spend time on site on the lookout for any unsafe acts and activities that transgress the requirements as specified in the EMPr to define what action shall be taken to rectify the problem and prevent its reoccurrence.

Incident Reporting and Remedy

If a leakage or spillage of hazardous substances occurs as a result of activities of Eskom or other users, the local emergency services will be immediately notified of the incident. The following information must be provided:

- The location;
- The nature of the load;
- The status of the site of the accident itself (i.e., whether further leakage is still taking place, whether the vehicle or the load is on fire, etc.).

Written records of the corrective and remedial measures decided upon, and the progress achieved therewith over time, must be kept. Such progress reporting will be important for monitoring and auditing purposes. The written reports may be used for training purposes in an effort to prevent similar future occurrences.

Written instructions

Written reporting will be given following an audit. The written instructions will indicate the source or sources of the problems identified on site and propose solutions to those problems. The implementation to solutions will be assessed in a follow-up audit and further written instructions issued if required.

Maximum allowable response time: 4 working days.

Liaison

Eskom will comply with the requirements for public consultation as required by the EIA Regulations 2010, promulgated in terms of the National Environmental Management Act, 1998 (Act No 107 of 1998).

Throughout the project, ongoing liaison will be maintained with authorities and communities alike to ensure that the following is effected;

- Timeous advanced warning of any project activities that may have some impact on the surrounding communities i.e. blasting.
- Ongoing feedback on the environmental performance of the project.
- A complaints register needs to be opened and maintained by the SECO. The register will contain the contact details of the complainant and information regarding the complaint itself, including the date of submission.

SITE ENVIRONMENTAL CONTROL OFFICER

Eskom will nominate a knowledgeable member of staff on site who will be responsible for the implementation of the Environmental Management Programme as well as the arrangement and maintenance of all traffic accommodation measures required for the duration of the contract. The SECO will oversee the construction phases of the project and will ensure that all environmental specifications and EMPr requirements are met at all times. The SECO will report to the Engineer in an advising capacity.

The SECO will be responsible for monitoring, reviewing and verifying Eskom's compliance with the EMPr. The SECO's duties in this regard will include, inter alia, the following:

- Ensuring that all the environmental authorizations and permits required in terms of the applicable legislation have been obtained prior to construction commencing;
- Monitoring and verifying that the EMPr and environmental authorization are adhered to at all times and taking action if specifications are not followed;
- Monitoring and verifying that environmental impacts are kept to a minimum;
- Assisting Eskom in finding environmentally responsible solutions to problems;
- Keeping accurate and detailed records of all activities on site;
- Inspecting the site and surrounding areas on a regular basis with regard to compliance with the EMPr and environmental authorization;
- Monitoring Eskom's undertaking to provide environmental awareness training for all new personnel on site;

ENVIRONMENTAL CONTROL OFFICER

- An Environmental Control Officer (ECO) must be appointed by Eskom prior to commencement of construction and DEA must be notified of such an appointment.
- The key responsibility of the ECO is to ensure that all the conditions stipulated in the Environmental Authorisation (EA) are being adhered to and should monitor project compliance with the conditions of the environmental authorisation, environmental legislation and the recommendations of the revised EMPr.
- The ECO must liaise with the SECO and/or attend site meetings where applicable and where necessary inspect the construction site on a regular basis to ensure that the mitigation and rehabilitation measures are applied.
- The ECO might make reasonable amendments to the EMPr in co-operation with the contractor and the SECO. Penalties for non-compliance must be enforced.
- The ECO will remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is handed over to Eskom by the contractor for the operation.
- Any conservation authority/institution as listed in the List of Interested and Affected Parties for the project should be allowed reasonable access to the construction site on request and arrangement with the ECO, the SECO and the Contractor.

SITE SPECIFIC REQUIREMENTS

The following specific requirements as identified during the EIA process need to be taken due cognizance of and proposed mitigating measures should be implemented:

- From an ecological perspective, taking all sensitivity calculations into account, the significance of the impacts of constructing the powerlines is seen as low. A number of mitigating measures are recommended to reduce impacts to low, as well as to ensure that all other impacts on the area remain low.

- The site-specific requirements will be updated with reasonable requests for mitigation by the negotiator during meetings and discussion with individual landowners prior to commencement of construction activities.
- A detailed schedule of affected landowners is included in the Register of Landowners on the Route in Appendix E11 of the BA Report.
- The applicable Emergency telephone numbers should always be available on site. Eskom's Environmental Officer Advisor, Ms Nkateko Msimango (Tel 072 018 5167/ 015 299 0012), is the relevant contact person from Land Development, Eskom Distribution Northern Region.
- A copy of this EMPr must be submitted to relevant landowners should they request it. They can assist Eskom in assuring that the contractor adheres to rules as stipulated and that mitigation and rehabilitation measures are applied.
- The specific measures identified to mitigate the impact of the construction site and workers must be implemented.

The following requirements should be adhered to:

- **Department of Roads:**

The approval and requirements of the Department of Roads should be obtained for the construction of the lilo line adjacent to the D1161 dirt road:

- A Wayleave Application should be supplied to the Dept, with appropriate plans before the commencement of construction.
- The general conditions for an overhead wayleave should be accepted by Eskom in writing, as per written notification of the Dept.

The conditions are generally (but should be confirmed):-

- The overhead lines are not to be lower than 10 m above the highest point of the road surface. This free clearance is the minimum distance.
- At crossings no pylons, poles, anchors or parts thereof may be erected closer than 16 m from the road reserve. Where the routes of the lines are parallel to the road(s), it must not be closer than 15 m outside the road reserve.
- This wayleave will be granted in terms of the Advertising on Roads and Ribbon Development Act (Act 21 of 1940, as amended) and the Roads Ordinance (Ordinance 22 of 1957, as amended) and its Regulations and does not exempt Eskom from the provisions of any other law.
- Crossing services should be perpendicular to the affected road(s).

ENVIRONMENTAL SUPERVISION

The SECO (contact person: Ms Nkateko Msimango, Environmental Management, Tel 072 018 5167 / 015 299 0012) and ECO must inspect the construction site on a regular basis (during pre-construction, construction and post-construction periods) to confirm the current state of the site and to ensure that the mitigation and rehabilitation measures are applied as specified in the EMPr. These officers might make reasonable amendments to the EMPr in co-operation with the contractor.

DESIGN

- The engineering drawings must adhere to any site-specific mitigation measures supplied by the geotechnical engineer for the project in order to accommodate the geotechnical and earth-scientific constraints in terms of founding and construction methods, construction materials, excavation, etc.
- The final design of the powerlines must accommodate any requirements of the landowners as communicated during the Public Participation Process and confirmed in the option document signed by the applicable affected landowner.
- The final design of the power line must accommodate the requirements of the ecologist, Mr Wynand Vlok, Tel 082 200 5312, of which the site-specific details are included in this EMPr. The ecological assessments are included in Appendix D1 of the BA Report.
- Protected or endangered plant species that will be affected by the physical footprint of the power lines will require the necessary permits to cut or remove them. All protected trees must be recorded during the walk down phase (once final route is pegged) and the presence or absence of *Sclerocarya birrea* must be confirmed.
- If at all possible, the removal of large trees should be avoided.
- North of the border of Gauteng with Limpopo, the corridor will cross a low ridge and it is suggested to keep the corridor as near as possible to the road, as it will lower impacts in the area. There are some farm roads near the fence that can be used as access roads during construction.
- Of relevance is, that there are rivers and streams present along the powerline corridors. Measures to limit impact to any watercourse are supplied in the BAR and EMPr and are inter alia
 - The power line will cross drainage lines and it is recommended that the pylons are placed at least 50m from the outer edge of any riparian zone.
 - This must be confirmed once the final route is pegged and a walk down evaluation can be done.
 - All stream crossings are considered as sensitive areas and no traffic are allowed through it (only at properly constructed bridges) during construction or maintenance of the power line.
 - The site for the substation should be at least 50m away from any drainage lines.
 - Further north to the substation, the corridor crosses a stream which is part of the headwaters of the Elands River. It is suggested that the new power line follows the existing corridor of the power line and old road, slightly further west of the D567. This will give access to the existing corridor for vehicles during construction and lower the need to clear vegetation. The riparian zone where the proposed power line will cross is impacted by the existing servitude (power line and old road) and will lower the need to trim or cut trees.
 - Further to the north, the proposed power line crosses the Elands River. This is again considered as a sensitive area and no vehicles can cross through the river during construction or maintenance (only bridges must be used). Pylons to the south of the river must be placed at least 50 m from the macro channel of the river (outside the floodplain area). The placement must be confirmed during the walk down phase with the specialist to ensure the sensitive area is not compromised.
- Should the mitigation measures be implemented there will be no impact on any watercourse or waterflow with regards to impeding flow or altering flow as discussed in Section 21 c & i of the Water Act and relevant General Authorisations. Therefore, there will be no need for Eskom to apply for a water use licence or register in terms of the General Authorisations.

The additional following requirements should be adhered to:

- Department of Roads:

Approval and requirements of the Department of Roads should be obtained for the construction of the line adjacent to the D626 and D567 roads:

- A Wayleave Application should be supplied to the Dept, with appropriate plans before the commencement of construction.
- The general conditions for an overhead wayleave should be accepted by Eskom in writing, as per written notification of the Dept.
- The conditions are generally (but should be confirmed):-
- The overhead lines are not to be lower than 10 m above the highest point of the road surface. This free clearance is the minimum distance.
- At crossings no pylons, poles, anchors or parts thereof may be erected closer than 16 m from the road reserve. Where the routes of the lines are parallel to the road(s), it must not be closer than 15 m outside the road reserve.
- This wayleave will be granted in terms of the Advertising on Roads and Ribbon Development Act (Act 21 of 1940, as amended) and the Roads Ordinance (Ordinance 22 of 1957, as amended) and its Regulations and does not exempt Eskom from the provisions of any other law.
- Crossing services should be perpendicular to the affected road(s).

COMPLIANCE WITH SPECIFICALLY IDENTIFIED LEGAL REQUIREMENTS

The National Water Act (Act No 36 of 1998)

- There are no scheduled water use activities associated with the proposed development project that will require authorisation by the DWA, as referred to in section 22(1) of the National Water Act, 1998 (Act No. 36 of 1998). This are expanded upon below:
- Within the powerline servitudes for the line there are rivers and streams present. Measures to limit impact to any watercourse are supplied in the BAR and EMP. Should the mitigation measures be implemented there will be no impact on any watercourse or waterflow with regards to impeding flow or altering flow as discussed in Section 21 c & i of the Water Act and relevant General Authorisations. Therefore, there will be no need for Eskom to apply for a water use licence or register in terms of the General Authorisations.
- It should however be noted that if it *becomes required* that any construction activities does have to take place within the 1:100 year floodline of any watercourse, authorisation from the Department of Water Affairs would be required before development may take place.
- Should the above be applicable, then locality maps that show where the development will affect the watercourse as well as a description of how it would be affected need to be submitted to the relevant office together with the license application to undertake such a development. The relevant activity is described in Section 21(i) as "Altering the bed, banks, course or characteristics of a watercourse". An additional activity that could be relevant and for which authorisation could also be required is Section 21(c) "Impeding or diverting the flow of water in a watercourse".
- Water used during construction is minimal. The cement and ground are compacted in layers around the pylons using a small amount of water. This water is sourced/purchased from farmers in the area with pre-existing rights and/or from the local municipality and transported to site in a water tanker. The compacted ground does not exceed 3m by 1,5m in area per pylon erected.
- If any of the proposed activities triggers a Water Use License in terms of the National Water Act (Act No 36 of 1998) as mentioned above, none of the authorised activities shall commence before that Water Use License is obtained from the Department of Water Affairs. The relevant water use license applications, if applicable, have to be submitted to the regional office of DWA.
- Additional information with the latest requirements for water use applications are supplied on the Department's website, www.dwae.gov.za.

National Forests Act (Act 84 of 1998)

- The project may involve the cutting, disturbing, damaging or destroying of any protected trees declared in terms of section 12 of the National Forest Act (NFA) (Act 84 of 1998). If this is proven during the EIA a licence in terms of

section 15 of the NFA will be required from the relevant provincial office of the Department of Agriculture, Forestry and Fisheries in order to cut them.

- All protected trees must be recorded during the walk down phase (once final route is pegged) and the presence or absence of *Sclerocarya birrea* must be confirmed.
- Enquiries regarding such permit applications can be made to the following addresses:
 - Assistant Director
Izak van der Merwe
Tel: (012) 336 7731
Email: 1dq@dwaf.gov.za
 - Or
Assistant Director: Forest Regulation
Ephraim Monyemoratho
Tel: (012) 336 7140
Email: 1ai@dwaf.gov.za
- Due cognisance must be taken of the latest forms and regulations currently available on the following website link :
<http://www2.dwaf.gov.za/webapp/SustainableProtectedTrees.aspx>
 - Application for a license regarding Protected Trees
 - Protected Trees Species list, 2007
 - Criteria & Framework for application of Legislation on Protection of Indigenous Tree Species, 2000

COMMUNITY ISSUES

- Eskom representatives must liaise personally with all directly affected landowners prior to any construction activities taking place. The objectives of this liaison will be the following:
 - To identify the most effective time schedule for construction activities to take place on the applicable properties;
 - To confirm site-specific requirements as identified during the EIA process;
 - To identify any additional site-specific issues with reasonable mitigatory measures that had not been identified and documented during the Public Participation Procedures of the EIA process undertaken for the project.
 - To update the contact details of affected landowners in case that access to properties are required for both maintenance and emergency situations.
 - To confirm contact details of the Contractor and Eskom representatives to ensure effective communication during the construction and operational phases of the project.
- Find attached in Appendix E11 of the BAR a register of the affected landowners.

EDUCATIONAL PROGRAMMES

An environmental education programme should be followed to ensure that the construction workers are well aware of relevant issues such as:

- The purpose of conservation of the natural environment;
- The restriction on cutting of firewood from the veld;
- Pollution control and waste management;
- Rules to curb social pathologies (prostitution, drunkenness, theft);
- HIV/Aids prevention.

CONSTRUCTION SITE

- Accommodation for labourers must either be limited to guarding personnel on the construction site (with labourers transported to and from existing neighbouring towns) or a separate fenced and controlled area where proper accommodation and relevant facilities are provided.

- Encourage the construction contractor to employ local people as far as is reasonably practical and encourage the contractor to transport them daily to and from site. This will reduce solid and liquid waste production and water demand at the site camps.
- Preferably camp sites, storage facilities and other necessary temporary structures to be erected within the grounds of the relevant substation.
- The location of the construction site must be negotiated with the relevant landowner and specifications of the landowner must be adhered to.
- Plan site campsites an appropriate distance from any facility where it can cause a nuisance.
- The construction site office and storage areas for material and equipment must be fenced in to prevent impacts and human interference to spread further than the site.
- Storage facilities for construction equipment must be provided for.
- Encourage the construction contractor to employ local people as far as is reasonably practical and encourage the contractor to transport them daily to and from the site. This would reduce solid and liquid waste production and water demand at the site camps.
- Contractors should develop a comprehensive site camp management plan. This should apply even in the case of the limited accommodation camps discussed above.
- No material or machinery to be stored or placed in the open veld along the powerline corridors.
- Minimize on-site storage of petroleum products.
- Ensure proper maintenance procedures in place for vehicles and equipment.
- Servicing of vehicles to be in designated areas with appropriate spill management procedures in place.
- Ensure measures to contain spills readily available on site (spill kits).
- Deposit solid domestic waste in containers and dispose at municipal waste disposal sites regularly (at least twice a week).
- Any waste, that cannot be recycled, will be transported to an appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act No 59 of 2008). The disposal of any construction waste will be the responsibility of the developer and should be done at least twice a week. A letter of agreement between the developer and the Permit Holder of the waste disposal site shall be provided to the DWA.
- Dispose of liquid waste (grey water) with sewerage.
- No water for drinking or cooking purposes should be used from out of streams, vleis or farm dams in the vicinity. It is important for relevant management or contractors to ensure that staff/workers are supplied regularly with adequate clean drinking and cooking water.
- Water should be sourced/purchased from farmers in the area with existing water rights and delivered to the site in the applicable water tankers.
- Sufficient ablution and proper cooking facilities must be provided at the site camp.
- Install appropriate facilities at the campsite. Preferably utilize municipal systems (conservancy tanks with periodic removal) or chemical toilets.
- In general, no ablution facilities should be located within 200m of the banks of any watercourse.
- The disposal of chemical toilets should be at a registered or licensed sewage disposal facility. Proof of agreement between the applicant and the sewage disposal facility for such disposal, confirming that there will be enough capacity to accommodate additional waste, should be submitted to the Department of Water Affairs.
- Fire breaks must be constructed on the inside perimeter to prevent fires from spreading from the site as well as fires entering the site from adjacent land in accordance with the Eskom Standard SCSASAAJ6: Rev 0, Distribution of Fire Risk Management.
- No open fires to be allowed outside of the demarcated areas of the substations or in the powerline corridors.

FIRE MANAGEMENT PLAN

A fire management plan must be identified, implemented and maintained, commencing prior to construction and maintained throughout the operational phase. The following additional measures must be included :

- No fires may be made for the burning of vegetation and waste.
- No open fires to be allowed outside of the demarcated areas of the substation.
- No firewood may be collected.
- Fire fighting equipment must be readily available on site during all times.

- Branches and other debris resulting from pruning processes should not be left in areas where it will pose a risk to infrastructure.
- Fires shall not be made for the purpose of chasing or disturbing indigenous fauna.

APPOINTMENT OF CONTRACTORS

- Environmental clauses as referred to in this EMP, should be included in contract documents of all contractors.
- All identified site-specific measures in terms of community requirements, the ecology and bird impact for the specific property must be included in the contract with the Contractor and implemented by the Contractor during the construction phase.
- The appointment of contractors with proven track records of sound environmental performance should be given priority.
- The Contractor must ensure that the majority of unskilled labour is obtained from the local residents in the macro area.
- The contractor must ensure that he is well aware of the implications of and must ensure compliance with the following legal requirements, guidelines and policies :
 - To identify the most effective time schedule for construction activities to take place on the applicable properties;
 - All relevant Eskom standards, specifications and procedures to manage the significant aspects with regards to oil management, bush clearing, entrance of private property, etc.
 - Requirements in terms of removing cutting and/or trimming of protected trees in terms of the National Forests Act (Act 84 of 1998).
 - All Sections and Regulations of the National Water Act, 1998 (Act 36 of 1998) must be complied with; specifically specifications as described in Section 19 on Pollution and Waste.
 - Environmental Best Practice Guidelines and Specifications, compiled by the Department of Water Affairs.
 - Legislation with regard to graves that is included in the National Heritage Resources Act (No 25 of 1999). It should be noted that the Act also distinguishes between various categories of graves and burial grounds. Other legislation with regard to graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended).
 - The contractor must be aware that all waste material generated during and after construction that cannot be recycled should be transported to the appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act No 59 of 2008). An agreement letter between the municipality and the contractor should be submitted to the regional office of the Department of Water Affairs regarding the disposal of such waste material.

CONSTRUCTION PHASE

GROUND AND SURFACE WATER

- Site-specific mitigatory requirements as included in the table in the section “Specifications applicable to all Phases of Project Development” must be adhered to.
- No water for drinking or cooking purposes should be used from out of streams, vleis or farm dams in the vicinity. It is important for relevant management or contractors to ensure that staff/workers are supplied regularly with adequate clean drinking and cooking water.
- Water should be sourced/purchased from farmers in the area with existing water rights and delivered to the site in the applicable water tankers.
- In all cases, abstraction of water for construction purposes will require a permit from the Department of Water Affairs unless pre-existing rights are purchased from farmers.
- Under no circumstances must surface or ground water be polluted.
- Adequate transformer oil containment precautions must be taken, in the case of the construction of the substation.
- Minimize on-site storage of petroleum products.
- Bund storage tanks to 120% of capacity.
- Ensure proper maintenance procedures in place for vehicles and equipment.
- Servicing of vehicles to be in designated areas with appropriate spill management procedures in place.
- Ensure that measures to contain spills are readily available on site (spill kits).
- All hazardous substance spills must be reported, recorded and investigated.
- If spills occur it should be reported to the SECO and/or ECO with immediate effect. It should be immediately cleaned up to the satisfaction of the Regional Representative of the Department of Water Affairs by removing the spillage together with the polluted soil and by disposing it at an authorized waste disposal site. The Department should be notified of such spills within 24 hours of the incident.
- All storm water run-off must be managed efficiently so as to avoid storm water damage and erosion to adjacent properties.
- During and after construction, storm water control measures should be implemented especially around stockpiled soil, excavated areas, trenches etc. to avoid the export of soil into the watercourse.
- Stormwater should not be discharged into the working areas and it should be ensured that stormwater leaving the footprint of the proposed development areas is not contaminated by any substance, whether that substance is solid, liquid, vapor or any combination thereof.
- Stockpiling of construction material and soils should be such that pollution of water resources is prevented and that the materials will be retained in a storm event.
- If pollution of any surface or groundwater occurs, the Regional Representative of the Department of Water Affairs as well as the SECO must be informed immediately.
- It is strongly recommended that no construction of any sort takes place within aquatic and riparian habitats encountered, as these habitats are viewed as sensitive.
- Of relevance is, that there are rivers and streams present along the powerline corridors. Measures to limit impact to any watercourse are supplied and are inter alia
 - The power line will cross drainage lines and it is recommended that the pylons are placed at least 50m from the outer edge of any riparian zone.
 - This must be confirmed once the final route is pegged and a walk down evaluation can be done.
 - All stream crossings are considered as sensitive areas and no traffic are allowed through it (only at properly constructed bridges) during construction or maintenance of the power line.
 - The site for the substation should be at least 50m away from any drainage lines.
 - Further north to the substation, the corridor crosses a stream which is part of the headwaters of the Elands River. It is suggested that the new power line follows the existing corridor of the power line and old road, slightly further west of the D567. This will give access to the existing corridor for vehicles during construction and lower the need to clear vegetation. The riparian zone where the proposed power line will cross is impacted by the existing servitude (power line and old road) and will lower the need to trim or cut trees.

- Further to the north, the proposed power line crosses the Elands River. This is again considered as a sensitive area and no vehicles can cross through the river during construction or maintenance (only bridges must be used). Pylons to the south of the river must be placed at least 50 m from the macro channel of the river (outside the floodplain area). The placement must be confirmed during the walk down phase with the specialist to ensure the sensitive area is not compromised.
- There will therefore be *no impact on any watercourse or waterflow with regards to impeding flow or altering flow as discussed in Section 21 c & i of the Water Act and relevant General Authorisations.*
- It is suggested that the applicant is complying with all aspects of the Water Act and General Authorisations, including all of the above points mentioned and there would therefore be no need to obtain a water use license or even register as a water user in terms of the General Authorisations.
- It should however be noted, that If there are any activities which relates to section 21 water uses of the National Water Act 1998 (Act No. 36 of 1998), the applicant will need to get authorisation from the Department before such activities commences.

WASTE MANAGEMENT

- The effective management and handling of waste is of crucial importance. Littering or illegal dumping of any waste material is prohibited. No waste disposal holes may be made on site. Under no circumstances should waste be burnt on site.
- Encourage the construction contractor to employ local people as far as is reasonably practical and encourage the contractor to transport them daily to and from site. This will reduce solid and liquid waste production at the site camps.
- Any construction waste (unused steel, conductor cables, cement or concrete) and general waste around the construction site (plastic, tins and paper) may degrade the environment if not disposed in the correct manner.
- Rubbish bags must be provided on the construction site as well as along the route to prevent littering.
- The solid waste shall be transported off site by the contractor and returned to Eskom Stores where the scrap will be handed over to buyers (scrap dealers).
- Any other waste that cannot be recycled shall be transported to an appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act No 59 of 2008).
- The disposal of any construction waste will be the responsibility of the developer and should be done at least twice a week. A letter of agreement between the developer and the Permit Holder of the waste disposal site shall be provided to the DWA.
- Provision must be made for the collection of all waste materials, keeping in mind that different waste materials require different waste sites.
- Dispose of liquid waste (grey water) with sewerage.
- Proper mobile toilet facilities must be provided for field staff. The use of the open veld is prohibited.
- Chemical toilets should be provided for employees on site and their disposal should be at a registered or licensed sewage disposal facility. Proof of agreement between the applicant and the sewage disposal facility for such disposal, confirming that there will be enough capacity to accommodate additional waste, should be submitted to the Department of Water Affairs.
- Minimize on-site storage of petroleum products. Relevant to this project, is that the only relevant dangerous goods to be stored on site is diesel. The diesel tank can hold 2000 litres (2 cubic metres). Of relevance is: GNR 544 of 2010, activity nr 13 that states "...storages of dangerous goods with a capacity above 80 cubic metres...". The amount of diesel that will be stored on site is 2 cubic metres and is therefore a relatively small amount and well below the threshold of the listed activity of above 80 cubic metres.
- *Precautionary measures* to be implemented for handling of oil and substances that could impact on the soils, ground- and surface water:
 - No hazardous substances may be stored on site for a period exceeding 90 days. (Note that the Department of Water Affairs requires a permit for a waste disposal site in the event that longer storage periods apply).
 - All hazardous substances, *if any*, at the site must be adequately stored and accurately identified, recorded and labeled. The storage of any hazardous substances must take place in a secured lock-up building or covered area. All these hazardous substances should be disposed of at a licensed Class H site.
 - Build adequate structures (berms and containment structures) to contain any oil spills which might emanate from transformers.

- Bund storage tanks to 120% of capacity.
- Ensure proper maintenance procedures in place for vehicles and equipment.
- Servicing of vehicles to be in designated areas with appropriate spill management procedures in place.
- Ensure measures to contain spills readily available on site (spill kits).
- A container filled with sand to soak up any spillages, as well as an empty container into which the “contaminated” sand could be placed and stored for collection by the supplier of the chemicals or oils must be provided.
- In case of a spill, any oil-contaminated waste (soil, cloths used to clean small spills etc) must be disposed of at a facility that is registered as a hazardous landfill.
- The Regional Representative of the Department of Water Affairs should immediately be informed if pollution of any groundwater or soils occurs. They will give instruction on actions to be taken in this regard.

PREPARATION OF SERVITUDE / VEGETATION CLEARANCE

- Site-specific mitigation requirements as included in the section “Specifications applicable to all Phases of Project Development” must be adhered to.
- The procedures for vegetation clearance and maintenance within overhead power line servitudes and on Eskom owned land, updated September 2009 must be implemented.

The minimum standards are summarised as a guideline as follows:

Item	Standard	Follow up
Centre line of proposed powerline	Specification for width of vegetation clearance on new lines (above 33kV) shall be determined based on the EIA and EMP. New power line, 33kV and below, an 8 metre (or as determined per site) wide strip of identified vegetation along the centre line should be cleared. If Required, 5 meter wide strip to be cut close to the ground (50 mm) for access purposes.	Re-growth shall be cut within 50 mm of the ground and/or treated with herbicide as necessary.
Inaccessible valleys (trace line)	If no other alternative, clear a 1 metre strip for access by foot, only for the pulling of a pilot wire by hand, or make use of a helicopter, or other technique, to fly line across.	Vegetation not to be disturbed after initial clearing – vegetation to regrow.
Tower position and support/stay wire position	Clear all vegetation within proposed tower position and within a maximum (depending on the tower type and voltage) radius of 5 m around the position, including destumping /cutting stumps to ground level, treating with an herbicide and re-compaction of soil.	Re-growth to be cut at ground level and treated with herbicide as necessary.
Indigenous vegetation within servitude area (outside of the maximum 8 m strip)	Selective trimming or cutting down of those identified plants interfering or posing a threat to the integrity of the powerline.	Selective trimming
Alien species (Declared Weeds ito CARA Reg 229) within servitude area (outside of the maximum 8 m strip)	Control programme to be implemented as per above procedure. Trimming need not be selective.	Cut and treat with appropriate herbicide.

- Indigenous vegetation which does not interfere with the safe operation of the power line should be left undisturbed.
- Where clearing for an access and maintenance road is essential, the maximum width to be cleared is 8m. Existing access roads should be used as far as possible.
- Clearing for pylon positions must be the minimum required for the specific tower, not more than a 5m radius around the structure position.

CONTROL OF ALIEN VEGETATION

- Alien vegetation in servitudes shall be managed in terms of the Regulation GNR.1048 of 25 May 1984 (as amended) issued in terms of the Conservation of Agricultural Resources Act, Act 43 of 1983. In Terms of these regulations, Eskom shall “control” i.e. to combat category 1, 2 and 3 plants to the extent necessary to prevent or to contain the occurrence, establishment, growth, multiplication, propagation, regeneration and spreading such

plants within servitude areas or land owned by Eskom. Due to the nature of alien vegetation, a control programme for alien vegetation control must be implemented. The implementation thereof can to be more frequent than the three-year interval recommended for indigenous vegetation. Alien vegetation can grow at rates significantly faster than 1 meter per year.

- An ongoing programme should be implemented to mechanically control alien plant species that invade the disturbed soils around the newly erected pylons, including areas that were disturbed and rehabilitated during the construction phase. This should be done in such a way as to allow the natural grasses to colonise the disturbed area, thereby keeping alien plants at bay. Most alien plants in the area are typically annual or bi-annual herbaceous plants and can be effectively controlled by slashing. In other words, not by hoeing which further disturbs the soils. This control is most effective if done early in the summer while the plants are still young and before they go to seed, thereby preventing further spread and infestation for the following growing season.
- Mechanical control of alien species to be implemented within two months of completion of construction of the powerline. Thereafter every six months or preferably late in the spring and then again late in the summer. Keeping in mind the project falls in a summer rainfall area and it is during this time plants are growing most actively. Once winter arrives or after veld fires it will be difficult to distinguish between alien and indigenous plant species.
- Surface area under powerlines to be mowed and not ploughed. Ploughing will disturb soils, creating opportunity for invasive weeds to colonise the area. Furthermore, due to the flat, grassland nature of the area it will be easy enough to mow.
- No chemical control to be used in the control of alien plants or indigenous plants.

PROTECTION OF FAUNA AND FLORA

- No animals or birds may be fed, disturbed, hunted or trapped as well as no plant material removed or stored if not part of identified vegetation clearance.
- Various species of indigenous trees and bush are protected by law in terms of the National Forests Act No 122 of 1984, which stipulates that it is necessary to obtain a permit from the relevant provincial office of the Department of Agriculture, Forestry and Fisheries in order to cut them.
- Protected or endangered plant species that will be affected by the physical footprint of the power lines will require the necessary permits to cut or remove them.
- All protected trees must be recorded during the walk down phase (once final route is pegged) and the presence or absence of *Sclerocarya birrea* must be confirmed.
- The rescue of protected and endangered plants that can be replanted should be coordinated by the ECO in consultation with the provincial environmental authorities, and the appropriate post-construction rehabilitation measures must be implemented.
- The harvesting of medicinal plants, which may occur on the site prior to site clearance, should be coordinated by the ECO.

BIRD IMPACT

- From a bird impact assessment perspective, the proposed development will have a low impact.
- Provided that large trees are not removed, the clearing of woodland under the new line will not have a huge impact.
- The alignment should be inspected prior to the construction commencing, in order to establish if there are any Red Data raptors breeding in close proximity to the proposed line.

SOIL EROSION

- Erosion in the area is low due to the flat plains.
- Neither drainage nor erosion are seen to be a significant threat should the mitigation as proposed be implemented.
- Site-specific mitigatory requirements as included in the table in the section "*Specification applicable to all Phases of Project Development*" must be adhered to.

- To cause the loss of soil by erosion is an offense under the Soil Conservation Act, Act No 76 of 1969.) Access roads and site surfaces must be monitored for deterioration and possible erosion.
- Construction activities should be well managed to prevent erosion and the following is relevant:
- Pro-active measures must be implemented to curb erosion and to rehabilitate eroded areas. All areas susceptible to erosion must be installed with temporary and permanent diversion channels and berms to prevent concentration of surface water and scouring of slopes and banks, thereby countering soil erosion.
- It is strongly recommended that no construction of any sort take place within aquatic habitats encountered, as these habitats are viewed as sensitive.
- Construction during the dry months/periods of the year should be considered in order to overcome the problems caused by excessive moisture.
- All vehicle movement must be along the existing tracks or roads.
- Access roads must be kept to a minimum. These same roads need to be used later for access during site inspections, line maintenance, etc. In other words, proper planning must be done so that on completion of the project there will be no need for the subsequent construction of other access roads. No access roads to be made through temporary or permanent vleis, pans or wetlands at all.
- Any access roads/tracks that move down through depressions and have a gradient of more than 5% need to have proper soil mounds (humps) constructed across them to control water runoff and minimise soil erosion.
- Unnecessary clearing of flora resulting in exposed soil prone to erosive conditions should be avoided.
- No trees or existing grass strata outside of the powerline corridor should be removed to lower any kinetic energy of potential run-off.
- Indigenous vegetation, which does not interfere with the safe operation of the substation/ powerline, should be left undisturbed.
- The eradication of any alien vegetation should be followed up as soon as possible by replacement with indigenous vegetation to ensure quick and sufficient coverage of exposed soil.
- Pro-active measures must be implemented to curb erosion and to rehabilitate eroded areas. All areas susceptible to erosion must be installed with temporary and permanent diversion channels and berms to prevent concentration of surface water and scouring of slopes and banks, thereby countering soil erosion.
- Specifications for topsoil storage and replacement to ensure sufficient soil coverage as soon as possible after construction activities as identified in the Environmental Management Programme must be implemented.
- All cleared areas must be ripped and rehabilitated after construction. The top 200mm layer of topsoil must be removed and stockpiled in heaps not higher than 2m and replaced on the construction areas once the activities have been completed. The affected areas should be replanted with a grass mixture indigenous to the area.
- Surface area under powerlines to be mowed and not ploughed.
- Disturbed surface areas in the construction phase to be restored. No open trenches to be left. No mounds of soils created during construction to be left.

HERITAGE RESOURCES

The main findings of the Heritage Impact Assessment are summarised as follows:-

The Phase I HIA study for the proposed Eskom Project revealed the presence of the following types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) in and near the Eskom Project Area, namely:

- Two graveyards dating from the historical period and from the recent past. Graveyard (GY01) in the Project Area may be affected by the Eskom Project
- Three Historical Houses which are older than sixty years.

Coordinates for graveyards in and near the Eskom Project Area

Graveyards	Coordinates	Location	Significance
<u>Inside the Project Area</u>			
Graveyard 01 (GY01)	25° 12.476'; 28° 33.590'	Rust De Winter 180JR	HIGH
<u>Outside the Project Area</u>			
Graveyard 02 (GY02)	25° 12.604'; 28° 34.182'	Rust De Winter 180JR	HIGH

Coordinates for Historical Houses near the Eskom Project Area

Historical Houses	Coordinates	Location	Significance
-------------------	-------------	----------	--------------

HH01	25° 12.413'; 28° 33.439'	Rust De Winter 180JR	Low-Med
HH02	25° 12.429'; 28° 33.442'	Rust De Winter 180JR	Low-Med
HH03	25° 12.917'; 28° 34.010'	Rust De Winter 180JR	Low-Med

- Only (GY01) may be affected by the Eskom Project. GY02 is outside the project area.
- None of the three Historical Houses will be affected by the project.

The following mitigation measures are proposed:

Graveyards can be mitigated in two ways depending whether they are to be affected, directly or indirectly, namely:

- It is recommended that GY01 be conserved *in situ* beneath the power line. Pylons should be erected on opposite ends of GY01. The power lines therefore can be strung across and above GY01. Conserving graves and graveyards in power line corridors create the risk that they may be damaged, accidentally, and that Eskom may be held responsible for such damages. Controlled access must exist for any relatives or friends who wish to visit graves or graveyards in power line corridors.
- GY01 can be exhumed and relocated. The exhumation of human remains and the relocation of graveyards are regulated by various laws, regulations and administrative procedures. This is not recommended.
- If any heritage resources of significance is exposed during construction the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notify in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the mitigation measures.
- Therefore, from a heritage point of view, both Alternatives 1 and 2 are suitable for the construction of the proposed project, should the proposed mitigation measures be followed i.e. to conserve GY01 *in situ* beneath the power line.

COMMUNITY ISSUES (SAFETY, SECURITY, NOISE, DUST, ETC.)

- Site-specific mitigatory requirements as included in the table in the section "Specification applicable to all Phases of Project Development" must be adhered to.
- Construction workers must be extremely careful not to damage any property. Should any damage occur it should be reported to the Environmental Officer and repaired to the written satisfaction of the landowner.
- Removal of agricultural products is prohibited.
- No firewood may be collected without the landowner's permission. All cut wood must be left on the property.
- No fires are to be made on private property.
- In order to prevent and/or minimize crime, it is required that all construction workers be supplied with controlled serviced accommodation or be supplied with transport to their homes.
- No wandering on adjacent properties is allowed, unless written consent has been obtained from the relevant landowners.
- All adjacent landowners have to be informed of the blasting programme (if applicable) prior to any blasting taking place. Contractors must liaise personally with adjacent landowners. All communication in this regard must be documented.
- Blasting may only be undertaken by specialists in the field and should be limited to small localized areas. All relevant legislation must be adhered to.
- All contractors and construction workers will be issued with temporary permits to enter the property.
- All construction workers will be allowed only for specified day light hours. Transport should be made available by the Contractor to remove labourers from the site after working hours.
- Secure accommodation facilities must be provided for guarding personnel.
- Supervision of labourers must at all times take place.
- Construction hours will be restricted to specific periods which exclude Sundays and public holidays.
- Sweeping of construction sites, clearing of building rubble and debris (storage areas, roads, etc.) must take place at least once a day.
- All excavated areas must be clearly marked and barrier tape must be placed around them to prevent humans and animals from falling into them.
- All gates into the properties of landowners should be kept closed at all times.
- No squatting to be allowed in the servitude area.

POST-CONSTRUCTION & OPERATIONAL PHASE

SOIL EROSION

- Specifications for topsoil storage and replacement to ensure sufficient soil coverage as soon as possible after construction activities as identified in the Environmental Management Programme must be implemented.
- All embankments (if any) must be adequately compacted and planted with grass to stop any excessive erosion and scouring of the landscape.
- After construction, all roads should be rehabilitated.
- The site must be rehabilitated and replanted with suitable, indigenous grass to prevent erosion.
- Vegetation within the powerline corridors to be mowed as a maintenance procedure and not ploughed. Ploughing disturbs the soils, increasing the possibility of soil erosion by water runoff.

ALIEN VEGETATION

- Mechanical control of alien plants around and within previously disturbed areas to be implemented within two months of completion of construction. Thereafter every six months or preferably towards the end of spring and again during late summer. These areas are predominantly around the erected pylons where actual soils will be disturbed during construction.
- No chemical control of alien plants to be used. These chemicals (herbicides) will have a detrimental effect on the surrounding vegetation and habitats. Furthermore and of critical importance, the servitudes run next to and through cultivated lands and herbicides (weed killers) will have a negative impact on these crops. Even if only slight this could cause unwanted and unnecessary negative publicity for Eskom.
- Vegetation within the powerline corridors to be mowed as a maintenance procedure and not ploughed. Ploughing disturbs the soils creating ideal conditions for alien plant species to invade the area. Due to the flat, grassy nature of the veld it will be easy to mow corridors and to slash disturbed areas infested with alien plant species.
- No chemical control to be used at all in the vicinity of dams or other bodies of water such as vleis and wetlands.

CONSTRUCTION SITE CLEARANCE

- After construction, any building material, signs of excess concrete, equipment, houses, ablution facilities, building rubble, refuse and litter must be removed and cleaned up from the construction site as well as from the store room by the contractor.
- Items that can be used again should be recycled. Unusable waste steel and aluminum will be sold to scrap dealers for recycling at the Eskom stores.
- Any waste that cannot be recycled should be transported to the appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act No 59 of 2008).
- Once construction is completed, the contractor has to obtain written consent from the relevant landowner that the construction site, construction areas, access routes, etc. are sufficiently and adequately rehabilitated to the landowners' satisfaction.

COMMUNITY ISSUES

- All complaints received with regards to poor conduct of Eskom personnel, malfunction of or damage to Eskom structures; bird killings as a result of electrocutions and/or collisions; etc. will be investigated by Eskom in co-operation with all the relevant stakeholders.
- The existing complaints structure must be revised by Eskom and be updated on a regular basis and communicated with all the affected landowners to ensure effective response and service supply.
- A list of all names, telephone numbers and addresses of the relevant Eskom employees, contractors and all affected landowners must be compiled and regularly updated and distributed to everyone to ensure sufficient

communication channels in case of emergency and where access is required for maintenance and debushing purposes.

- Once construction is completed, the contractor has to obtain written consent from the relevant landowner that the construction site, construction areas, access routes, etc. are sufficiently and adequately rehabilitated to the landowner's satisfaction.
- No wandering on adjacent properties is allowed, unless written consent has been obtained from the relevant landowners.

VEGETATION MAINTENANCE OF THE SERVITUDE

- The document "Eskom Environmental Procedure: Procedure for Vegetation Clearing and Maintenance within Overhead Powerline Servitudes and on Eskom owned land", updated September 2007, must be implemented.
- Selective bush clearing must take place. Indigenous vegetation which would not interfere with the safe operation of the new Substation and the power line should be left undisturbed.
- A minimum rolling three year vegetation management programme should be promoted. This will allow effective identification, management and follow up of problematic vegetation.
- Surface area under powerlines to be mowed and not ploughed.
- Alien vegetation in servitudes shall be managed in terms of Regulation GNR.1048 of 25 May 1984 (as amended) issued in terms of the Conservation of Agricultural Resources Act, Act 43 of 1983. In terms of these regulations, Eskom shall "control" i.e. combat category 1, 2 and 3 plants to the extent necessary to prevent or to contain the occurrence, establishment, growth, multiplication, propagation, regeneration and spreading of such plants within servitude areas or land owned by Eskom. Due to the nature of alien vegetation, a control programme for alien vegetation control must be implemented. The implementation thereof can be more frequent than the three-year interval recommended for indigenous vegetation. Alien vegetation can grow at rates significantly faster than 1 meter per year.
- Mechanical control of alien plants around disturbed areas to be implemented within two months of completion of construction. Thereafter every six months. These areas are predominantly around the erected pylons where actual soils will be disturbed during construction. Although the area is heavily infested with alien weeds and natural veld is all but non-existent, it is still important to prevent weed growth in case new, more aggressive species have been introduced during the construction phase of the project.
- No chemical control of alien plants to be used. These chemicals (herbicides) will have a detrimental effect on the surrounding vegetation and habitats.
- Vegetation within the powerline corridors to be mowed as a maintenance procedure and not ploughed. Ploughing disturbs the soils creating ideal conditions for alien plant species to invade the area, as well as increasing the possibility of soil erosion by water runoff.

BIRD IMPACT

- The poles should be fitted with **bird perches on top of the poles** to draw birds, particularly vultures, away from the potentially risky insulators, to reduce the chances of electrocution (see figure in Appendix D3 of the BAR).
- The spans (of powerline) that run parallel to and cross major drainage lines and old lands should be marked with **Bird Flight Diverters** on the earth wire of the line, five metres apart, alternating black and white (see Sensitivity map in Appendix D3 of the BAR for the sections of the alignments to be marked with Bird Flight Diverters).

FIRE RISK MANAGEMENT

- The existing complaints structure must be revised by Eskom and be updated on a regular basis and communicated with all the affected landowners to ensure effective response and service supply.
- The contact details of all landowners affected as well as relevant Eskom staff must be listed and updated regularly and be communicated with all the stakeholders to ensure effective communication in the case of emergencies such as veldfires.

- Fire breaks must be constructed on the inside perimeter to prevent fires from spreading from the site as well as fires entering the site from adjacent land in accordance with the Eskom Standard SCSASAAJ6: Rev 0, Distribution of Fire Risk Management.
- Branches and other debris resulting from pruning processes should not be left below conductors or in areas where it will pose a risk to infrastructure.
- Debris shall not be burnt under any circumstances
- Fires shall not be made for the purpose of chasing or disturbing indigenous fauna.
- Eskom encourages affected landowners and maintenance staff to participate in the Fire Protection Agency.

MONITORING PROGRAMMES

- The Environmental officer should inspect the construction site on a regular basis to ensure that the mitigation and rehabilitation measures are applied as specified in the Environmental Management Programme.
- Inspection of the servitude should include monitoring of the servitude during the Post-Construction & Operational Phase to detect any potential erosion problems timely. Mitigation measures should immediately be identified and implemented by Eskom in cooperation with the landowner.
- Any incidents resulting from Eskom structures and operation that might have a detrimental impact on the environment will be investigated and measures, if applicable, will be identified in close cooperation with the affected parties and/or stakeholders and be implemented and monitored accordingly.
- Eskom must at all times follow acceptable maintenance and operational practices to ensure consistent, effective and safe performance of the infrastructure.

DECOMMISSIONING

Should the powerline and substation have to be decommissioned in the future (it is not envisaged), the structures will generally have to be physically removed. This will entail the reversal of the construction process with potential significant environmental impact if not undertaken in a sensitive manner. It is therefore recommended that Eskom compile an Environmental Management Programme (EMPr) specifically for the decommissioning process at that stage to restrict and prevent potential negative impact on the environment.

It is proposed that this EMPr for Decommissioning includes the following mitigating measures:

- The construction teams will ensure that all waste is removed from the site and that all items are recycled as far as possible at the Eskom stores. Excess waste steel and aluminum can also be sold to scrap dealers for recycling.
- Any waste that cannot be recycled will be transported to the appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act No 59 of 2008).
- The natural habitat within the servitudes will as far as reasonable be rehabilitated to its original state.
- Once construction is completed, the contractor has to obtain written consent from the relevant landowners that the construction site, construction areas, access routes, etc. are sufficiently and adequately rehabilitated to the landowners' satisfaction.
