

ESKOM PENGES SUBSTATION DECOMMISSIONING PROJECT

Environmental Management Plan & Rehabilitation Recommendations

I. OBJECTIVES OF THE ENVIRONMENTAL MANAGEMENT PLAN

The compilation of this Environmental Management Plan (EMP) forms part of the requirements of the EIA Regulations 2014 and compliance with the contents of this report is required during the construction phase of the project. The EMP serves as an environmental management tool by providing a generic structured plan of mitigatory measures, which serves as a guide to assist in minimising the potential environmental impact of the activity that may arise during the construction (decommissioning) phase.

The EMP provides a set of guidelines for the environmental management of all works to be executed by the Engineer and Contractor, so as to have a minimum impact on the environment in accordance with all relevant legislation, policies and standards.

In this context it should be viewed as a dynamic or 'living' document, which may require updating, or revision during the life-cycle of the project to address new circumstances as the need arises. It is essentially a written plan of how the environment is to be managed in practical and achievable terms.

The effectiveness of the EMP is limited by the level of adherence to the conditions set forth in this report by the Developer and the Contractor. It is further assumed that compliance with the EMP will be monitored on a regular basis as set out in the EMP and contractual clauses.

The EMP forms part of the Contract Documentation and is thus a legally binding document. An individual responsible for environmental damage must pay costs both to environment and human health and the preventative measures to reduce or prevent additional pollution and/or environmental damage from occurring (the Polluter Pays Principle).

Further to the above, the following objectives apply:

- 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 minimise 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 EMP;
- 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 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.

Rehabilitation Recommendations

The Penge substation has high levels of asbestos contamination and some rehabilitation recommendations are included herein. It is however important to note that the services of an *Approved Asbestos Inspection Authority* must be obtained in order to draft a detailed Plan of Work for the rehabilitation of the substation yard and its surrounds, as required in terms of Regulation 21 of the Asbestos Regulations, OHSAct (85 of 1993).

II. DETAILS OF THE PERSON WHO PREPARED THE EMP

This Environmental Management Plan was prepared by Landscape Dynamics cc, an environmental consultancy firm established in May 1997. Their core business involves the execution of Environmental Impact Assessments that include the compilation of Environmental Management Plans for all of these projects. The team members responsible for this project and the compilation of the EMP are Annelize Grobler (012 460 6043 / 082 566 4530 / agrobler@landscapedynamics.co.za), a qualified landscape architect specialising in the field of environmental impact assessments, and Susanna Nel (021 855 0912 / 082 888 4060 / susanna@landscapedynamics.co.za).

III. DETAILS OF THE PROPOSED ACTIVITY

The applicant is Eskom Holdings SOC Limited: Land Development & Environment, Distribution Division: Limpopo Operating Unit. The Eskom Environmental Officer for this project is Ms Rendani Phadagi, / 015 299 0111 / 084 479 0424 / PhadagR@eskom.co.za.

The project involves the decommissioning of the existing Penge Substation. The study area is situated west of the village of Penge along its western boundary, approximately 30km north of Burgersfort in the Sekhukhune District Municipality, Limpopo Province.

IV. LEGAL REQUIREMENT

The applicable legislation in terms of the environment refers to procedures prescribed by the provisions of the Environmental Impact Assessment Regulations, 2014, made under Section 24 (5) of the National Environmental Management Act, 1998 (Act No 107 of 1998) (NEMA). Of particular importance is Section 28 (1) of NEMA which places an obligation on all individuals to take due care of the environment and to ensure remedial action is instituted to minimise and mitigate environmental impact.

The relevant applicable activities for which environmental authorisation had been applied for are:

Listing Notice 1	
<p>GN 983, Dec 2014, Number 31</p> <p>The decommissioning of existing facilities, structures or infrastructure for-</p> <p>(i) any development and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;</p> <p>(ii) any expansion and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;</p> <p>(iii) any development and related operation activity or activities and expansion and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;</p> <p>(iv) any phased activity or activities for development and related operation activity or expansion or related operation activities listed in this Notice or Listing Notice 3 of 2014; or</p> <p>(v) any activity regardless the time the activity was commenced with, where such activity:</p> <p>(a) is similarly listed to an activity in (i), (ii), (iii), or (iv) above; and</p> <p>(b) is still in operation or development is still in progress;</p> <p>excluding where-</p> <p>(aa) activity 22 of this notice applies; or</p> <p>(bb) the decommissioning is covered by part 8 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies.</p>	<p>The existing Penge Substation will be decommissioned.</p>
Listing Notice 3	
<p>GN 985, Dec 2014, Number 12</p> <p>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>e. Limpopo</p> <p>i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;</p> <p>ii. Within critical biodiversity areas identified in bioregional plans; or</p> <p>iii. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.</p>	<p>More than 300m² of indigenous vegetation will be cleared in areas that has been identified as Critical Biodiversity Area 1</p> <p>(The SANBI map is attached under Appendix A).</p> <p>The clearance of indigenous vegetation will take place during the decommissioning (construction) phase which will be required for laydown areas.</p>

Application for environmental authorisation had been lodged with the Department of Environmental Affairs (DEA).

V. DETAILS OF PERSONS RESPONSIBLE FOR IMPLEMENTATION OF EMP

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 Plan and the conditions of the Environmental Management Plan 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 ENVIRONMENTAL CONTROL OFFICER

The following details of the Environmental Control Officer must be filled out, signed and forwarded to the Department of Environmental Affairs prior to construction:

Company Name: _____

Contact Person(s): _____

Physical Address: _____

Street Address: _____

Office Telephone Number: _____

Cell phone Number: _____

Fax Number: _____

V. PROPOSED MECHANISM FOR COMPLIANCE

Key impacts generally associated with Eskom construction activities which are applicable to this project are:

- Impact on natural habitat (fauna and flora)
- Impact on birds
- Impact on cultural heritage resources
- Risk of groundwater pollution
- Risk of erosion
- Community Impact

Impacts specifically associated with the Penge substation decommissioning are:

- Health & Safety of construction workers
- Increased asbestos pollution levels in the environment
- Ineffective rehabilitation of asbestos contaminated land

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 throughout all Phases of Project Development
- Design & Pre-construction Phase
- Construction Phase
- Post-construction Phase / Rehabilitation

ROLES AND RESPONSIBILITIES
SPECIFICATIONS APPLICABLE THROUGHOUT ALL PHASES OF PROJECT DEVELOPMENT

DEPARTMENT OF ENVIRONMENTAL AFFAIRS

The National Department of Environmental Affairs (DEA) is the designated authority responsible for authorising this EMP. DEA has overall responsibility for ensuring that the Applicant complies with the conditions of Environmental Authorisation and the EMP.

DEA shall also be responsible for approving any amendments to the EMP (if required). DEA may also perform random site inspections to check compliance with the EMP.

DEPARTMENT OF WATER AFFAIRS

The Department of Water Affairs has confirmed rights to inspect the project at any time to ensure compliance with relevant legislation.

ESKOM HOLDINGS SOC LIMITED (DEVELOPER)

The Applicant is the Developer and has overall responsibility for compliance with the EMP as it is a fundamental component of the authorisation requirements for the project.

This means that the Developer must:

- Ensure that the professional team and the Contractors are appropriately briefed and that their appointment includes environmental requirements as relevant;
- Ensure that he/she is kept fully informed of the performance of the project against the requirements of the EMP;
- Ensure that appropriate action is taken where consistent incidents of non-compliance are taking place;
- Ensure that any corrective action required by the authorities is implemented.

Project Co-ordinator (PC)

The primary responsibility of the Project Co-ordinator (PC) is to ensure that the Contractor complies with the environmental specifications in this document. In addition the PC shall:

- Assume overall responsibility for the effective implementation and administration of the EMP;
- Ensure that the EMP is included in the Contractors' contract documents (including all subcontractors);
- Ensure that the EMP and any other relevant documentation are provided to the applicable contractors;
- Inform Environmental Practitioner of the date of construction at least 2 months in advance.

Construction Supervisor and the Contractor (if utilised);

- Undertake regular inspections of the Contractor's site (in conjunction with the Clerk of Works, where relevant) as well as the powerline servitude in order to check for compliance with the EMP in terms of the specifications outlined in this document.

- Keep a register of major incidents (spills, injuries, complaints, legal transgressions, etc.) and any other relevant issues related to the EMP;
- Report any problems (or complaints) concerning the environment arising out of the construction phase to the appointed Environmental Control Officer;
- To ensure Contractor staff are trained in accordance with the EMP;
- To implement recommendations of possible audits.
- The contractor environmental site representative to have the following training, from a recognised or accredited institution:
 - Oil Spill Management Training
 - Integrated Waste Management
 - Environmental Awareness /Induction
 - Tree Identification (vegetation management)
 - Environmental Law Training
 - Environmental Authorisation_Environmental Management Plan (EA_EMP) Training
- The environmental site representative to be permanently on site during construction.
- The environmental site representative should have an appointment letter stipulating roles and responsibilities.

Eskom construction team or external construction contractor and all subcontractors

The construction team / contractor / subcontractor shall:

- Ensure that the environmental specifications of this document are effectively implemented. This includes the on-site implementation of steps to mitigate environmental impacts;
- Monitor environmental performance and conformance with the specifications contained in this document during site inspections;
- Discuss implementation of and compliance with this document with staff at routine site meetings;
- Report non-compliances to EMP and Environmental Authorisation to PC and Environmental Control Officer (ECO) and Eskom Environmental officer immediately (on discovery), within 24 hours of the event discovered or occurred;
- Report progress towards implementation of and non-conformances with this document at site meetings with the PC;
- Ensure that suitable records are kept and appropriate documentation is available to the PC; and
- Ensure that construction employees are trained in accordance with the requirements of the EMP.

The Contractor will conduct all activities in a manner that minimises disturbances to and impacts on the environment.

The Contractor is deemed not to have complied with this EMP if:

- There is evidence of contravention of clauses within the boundaries of the property and adjacent areas during the Construction Phase;
- If environmental damage ensues due to negligence;
- The Contractor fails to comply with corrective or other instructions issued by the Local Authority, PC, ECO, Eskom Environmental Officers or the Developer within a specified time;
- Failure to take any reasonable measure to protect the environment if there is a perceived or identified environmental risk associated with an activity that has not been defined in the EMP; and

- The Contractor fails to respond adequately to complaints from the public.

Application of a penalty clause will apply for incidents of non-compliance as per the Schedule of Fines as mentioned below. Such fines will be paid by the Contractor to the Developer and will be used in rehabilitation and / or landscaping.

Environmental Control Officer (ECO)

The key responsibility of the ECO is to ensure that all the conditions stipulated in the Environmental Authorisation are being adhered to and should monitor project compliance with the conditions of the Environmental Authorisation, environmental legislation and the recommendations of the EMP.

Furthermore, the duties of the ECO shall include, inter alia, the following:

- Ensuring the necessary environmental authorisations and permits, if any, has been obtained;
- Advising the Contractor on environmental issues within defined construction areas;
- Undertaking at least once-per-month site visits, or more if required to ensure compliance with this EMP;
- Completing environmental checklists during site visits and keeping a photographic record of progress on site from an environmental perspective;
- Reporting back on any environmental issues/incidents to the DEA as reported to by the Contractor; and ensure that DEA is informed of work progress on site;
- Preparing an environmental audit report at the conclusion of the construction phase.
- Attending 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.
- Make reasonable amendments to the EMP in co-operation with the contractor. Penalties for non-compliance must be enforced.
- 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.
- 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 and the contractor.

Environmental Training and Awareness

The purpose of the environmental training is to communicate potential environmental impacts relating to construction activities to contractors to ensure that precautionary measures are undertaken to avoid and/or mitigate the impacts. Environmental awareness training sessions should be undertaken prior to any work commencing by any contractor or sub-contractor on site as well as throughout the construction phase. The ECO shall give initial EMP training prior to any work starting on site. The training record must be kept on the project file for each training session.

Where possible the presentation will be conducted in the language of the employees. The environmental training could, 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, minimising the production of waste and re-use, recover and recycle waste where possible;
- Details regarding palaeontological, archaeological and 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 or any other archaeological and/or palaeontological finds 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 construction.

EMP training and awareness before commencement of construction

- Eskom/ECO will provide an Environmental Management Plan and Awareness Training for all employees of the Contractor, sub-contractor, consultants, agents, visitors and suppliers. The initial training workshop will be held prior to any work commencing on site. The Contractors shall ensure that all construction personnel, including senior route staff, sub-contractors and suppliers etc., attend the environmental awareness-training prior to commencing any work i.e. camp establishment, clearing and installations. Additional staff, sub-contractors and suppliers coming on to the route must attend an environmental awareness workshop prior to the commencing their duties. Subsequent training and awareness sessions will be arranged at a mutually agreed time and venue.
- The main contractor must provide the ECO with (a) a list of all sub-contractors and their scope of work for the contract and (b) a time schedule of works before the initial environmental training awareness session is scheduled. This will assist the ECO to schedule subsequent EMP awareness training sessions as and when required.
- No construction work may take place on site unless under the supervision of a person who has attended an Environmental Awareness session.
- The PC shall inform the environmental practitioner prior to starting construction, so that training can be given.

EMP awareness training throughout the construction phase

- EMP awareness training must be given to new contractors and sub-contractors that start to work on site throughout the construction phase at various stages.
- All contractor and sub-contractor teams involved in work on site must be briefed on their obligations towards environmental controls and methodologies in terms of this EMP prior to commencement of any construction and construction related activities on an on-going basis throughout the construction phase.
- In the case of new workers coming on site throughout the construction programme, the site contractor is responsible to ensure all new labour arriving on site is made aware of the contents of the EMP and is briefed on the Environmental Awareness Training session.
- A register must be kept of all training given to contractors and sub-contractors, indicating the date, time, venue, attendees, name of trainer, name of contractor, signatures and unique numbers / identity numbers of attendees.

- If the construction is phased and the activities are different, a training session must be conducted before the commencement of each phase. The environmental issues, construction impacts and mitigation measures for each phase must be discussed in detail at this training session.

Emergency Management

All emergency incidents should be investigated in terms of Eskom's EPC 32-95: Safety, Health & Environmental Incident Management Procedure, in addition to any ELC requirement. This procedure describes the high-level intention for the effective incident management of work-related incidents as well as environmental damage. The aim of this procedure is to ensure and facilitate the effective and efficient management of incidents from the moment that one occurs, until it can be audited that corrective and preventive measures were developed and taken. This procedure is supported by annexes which set out the detailed rules, requirements and action steps as well as useful examples and templates. These two have to be read and applied together to ensure that the aim of this procedure and its supporting annexes is met.

An **Emergency Incident** can be defined as an unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed. It is also an accident involving the spilling of a harmful substance that finds or may find its way into a water resource.

An **Environmental Incident** can be defined as pollution, erosion, cutting of protected and/or indigenous trees, hazardous substance spillages, wildlife interactions, public complaints and loss of biodiversity caused by Eskom Distribution's activities, as well as non-compliance to legislation such as Environmental Authorisations, Record of Decisions, permits and licences.

Incident Management – Aims and objectives

The aims and objectives of incident management are as follows:

- Reduce risk and prevent any recurrence of incidents
- Ensure incidents are managed effectively
- Ensure incidents are classified and recorded accurately
- Ensure prompt and appropriate investigation
- Promote the proactive use and value of near-miss occurrence reporting
- Improve the quality of safety and the work environment by learning from incidents, including near miss occurrences;
- Share incident information with all site personnel and other subcontractors.
- Report to relevant authorities as appropriate
- Promote the analysis of trends and review practices accordingly

Incident Reporting

After becoming aware of an incident, the following should be done as per Eskom's ELC procedure:

- All incidents must be reported within 24 hours or end of shift, regardless of the severity of the incident. Once an employee identifies that an incident has occurred, he/she must immediately notify his/her supervisor of such an incident, regardless of its severity, so that an appropriate and timely response can be made, an initial evaluation conducted, and an incident classification made.
- The responsible supervisor shall notify the ECO, Eskom Environmental officer and Project Coordinator within 24 hours of the incident. Thereafter, it will be determined by the ECO if reporting to the authorities

is required.

- Immediate clean-up action is required;
- Eskom then has 14 days to formally investigate the incident internally before sending a report to the applicable authorities.

Hazardous Waste - Incident Reporting

If a leakage or spillage of hazardous substances occurs as a result of Eskom's activities or other users, the local emergency services will be immediately notified of the incident. The location, nature of the load and 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.) must be provided.

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.

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 organisation (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.
- 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), the National Water Act, 1998 (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.
- *Hazardous material*
 - 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.

Spillages

- Streams, rivers, underground water 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 procedure, to ensure that there will be an appropriate rapid response to unexpected or accidental environmental related incidents throughout the life cycle of the project.
- Incidents must be reported in line with OU Oil Spill Management Instruction and the Eskom's Incident Management Procedure. The incident must be reported within 24 hours via a flash report.
- The Environmental Control Officer (ECO) will assess the situation and act as required in all cases; the immediate response will be to contain the spill. The exact treatment of soil/water pollution will be determined by the ECO.
- 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.
- *Hazardous substance spillages*
Hazardous substance spillages can be defined as any hazardous liquids or substances spilt that have the potential to pollute aquatic or terrestrial ecosystems or present a health hazard to other living organisms.
 - The Eskom construction team shall have an oil spill kit on site and where working with hazardous substances, also drip trays on trucks.
 - Vegetated areas cleared of hazardous waste will be re-vegetated.

During an emergency situation, the following will apply

- No person shall be allowed to approach a spill, fire, etc. unless he/she is equipped with the personal protective clothing and equipment.
- The risk involved shall be assessed before anyone approaches the scene of the incident with the emergency response plan as per Oil Spill Management Instruction and Environmental Emergency Preparedness Procedure.
- 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 that pose a threat to landowners.
- It must be ensured that the basic firefighting 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 firefighting equipment at hand.

Monitoring

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

Inspections

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

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 is 4 working days unless specified otherwise by the ECO.

Liaison

Eskom will comply with the requirements for public consultation as required by the National Environmental Management Act, 1009 (Act No 107 of 1998).

Throughout the project, ongoing liaison will be maintained with authorities and communities when needed to ensure that the following is done;

- 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 ECO. The register will contain the contact details of the person who made complaints and information regarding the complaint itself, including the date of submission.

Checking and Corrective Action

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

- There is evidence of contravention of the EMP specifications within the boundaries of the construction site, site extensions and access roads;
- There is contravention of the EMP 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.

The approved Eskom penalty fee structure is as follows:

Non – compliance	Penalty for non-compliance
PRE-CONSTRUCTION	
Failure to demarcate Construction area/working areas off before construction starts.	R10 000-R15 000
Failure to maintain demarcated area(s) throughout the construction phase	

Failure to demarcate stock piling area of building materials	R1 000
Fencing off the construction site with mesh fencing of 1.8m, where necessary or other suitable material as agreed on by ECO and contract specifications	R5 000
Sitting of access road/s to be approved by ECO & demarcated with stakes before any construction starts (if applicable)	R5 000
Temporary route used for construction must be determined on site with ECO (if applicable)	R1 000 - R5 000
Sensitive features that may be harmed/removed/harvested must be clearly marked or demarcated and all construction team must be made aware of this.	R2 500 - R5 000
Failure to give environmental awareness to Construction team and all sub-contractors of all environmental aspects that could lead to imposition of environmental penalties/fines and keep the proof on file.	R5 000 - R10 000
All appointed contractors must attend Environmental Training contractor to assure that all subcontractors be informed and signed DOU	
Method statements must be provided on request by the ECO. No work may commence until the Method Statement is accepted by the ECO/Project Coordinator and Clerk of Works and contractor representative.	R2 500 - R5 000
CONSTRUCTION	
Failure to keep a copy of the EMP & Environmental Authorisation/Record of Decision (ROD) with all the conditions of approval and the relevant Method Statements must be kept on at site at all times.	R500 - R5 000
Construction team behaviour	R200 - R2 500
Construction team may not overnight on site.	
All noise and sound generated during all phases of the projects must comply with the relevant SANS codes and standards.	
Eating of meals only allowed in demarcated area	
No pets permitted on site	R5 000 - R10 000
Construction crew must stay within the demarcated construction area. (Applicable in sensitive sites)	
Failure to park all construction vehicle on the demarcated area and provision of any oil leaks must be made for example Drip trays	R1 000 - R5 000
Driving, parking and storing of machinery vehicles are only allowed inside demarcated areas and existing roads.	R500 - R5 000
Machinery may only be used on the road and may not disturb the vegetation on the sides of the road except if cleared by ECO. Machinery used must be carefully considered to limit environmental damage	
Failure to conduct bush clearing according to Eskom procedure for vegetation clearance and maintenance within the Overhead Powerline Servitude and on Eskom owned land (refer to EPC 32-247)	R5 000 - R10 000
Failure to undertake herbicide spraying under the supervision of registered Pest Control Officer.	R5 000 - R10 000
Excavations	
No topsoil may be removed or altered outside the demarcated area and/or which was not specified. Storage of topsoil outside demarcated area to obtain permission from the landowner.	R5 000 - R10 000

Toilets	
Failure to put ablution facilities on site for the construction worker during the construction phase. These facilities must be used by the construction workers and be removed when the project is completed.	R2 500 - R5 000
Failure serviced the toilets regularly, (according to the manufacturer's instructions) and kept clean.	R1 000
Fire Prevention	
Failure to keep fire equipment on site at all times	R500 - R4 000
Failure to keep firefighting equipment to be in good working order and serviced.	R500 - R2 500
Keeping of open fire on site, this pose a risk of fire.	R1 000 - R5 000
Dust pollution control	
Failure to suppress dust through regular water spraying the emitted during the construction phase (Site specific/weather Dependent)	R500 - R5 000
Water run-off	
No contamination of water bodies, rivers, dams or wetlands is permitted	R5 000 - R15 000
Failure to take special care where the powerline will cross river, streams or wetlands.	R2 500 - R10 000
Waste Management	
Failure to provide dust bins/skip on site in order to handle all waste litter generated during construction phase of the project.	R500 - R5 000
General litter / building refuse must be cleaned up on a regular basis from the site	R300 - R5 000
Cement-contaminated water, paint, oil, cement slurries, etc. must be stored in watertight containers or as agreed with ECO	R500 - R5 000
Failure to report oil spillage to ECO via flash report within 24 hours of the spill occurring	R2 500 - R5 000
Any cement / concrete spillage to be cleaned up immediately.	R500 - R5 000
Ready-mix delivery trucks must not carry out the wash down of their trucks on or around the site unless arranged with ECO.	
Waste must be disposed of at an official waste deposit site on a regular basis. Keep the proof on file, waste manifest.	R5 000 - R10 000
The absence of or inadequate drip trays or binding facilities for on site oil leakage	R200 - R5 000
Failure to clean up oil/fuel leaks from on-site machinery	
Failure to keep oil spill remediation chemicals on site.	
Soil erosion	
Failure to prevent degradation and soil erosion on the construction site.	R500 - R5 000
Failure to notify property owners of the construction before commencement and obtain the permission in writing and keep on file.	R2 500 - R5 000
Rehabilitation	
Failure to remove rocks and stones/stock pile in area recommended by ECO	R500 - R5 000
Failure to remove all old concrete and alien materials from site	R500 - R5 000
Failure to clear all waste and building material on site before commissioning of the project	R500 - R5 000
General	
Failure to comply with the Environmental Conditions of the approved Environmental Authorisation	R5 000 - R20 000

DESIGN AND PRE-CONSTRUCTION PHASE

OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT NO. 85 OF 1993): Asbestos Regulations, 2001 (Government Notice. R: 155; 10 February 2002)

The Asbestos Regulations, 2001, OHS Act (85 of 1993) guides health and safety aspects when working with asbestos. These Regulations are attached as Addendum A to this EMP.

The following is, amongst other, applicable to the decommissioning of the Penge substation:

Notification of asbestos work

No asbestos work may be carried out unless the provincial director of the Department of Labour has been notified in writing thereof prior to the commencement of such work.

Demolition

Any person who intends to have demolition work carried out, shall—

- before the commencement of that work, take steps to ensure that—
 - **demolition work is carried out by a person who is a registered asbestos contractor;**
 - **all asbestos materials likely to become airborne are identified;**
 - **a plan of work is submitted for approval at least 30 days prior to the commencement of that work to an approved asbestos inspection authority** who may at its discretion allow a shorter period of time for such submission and may approve standardised procedures for routine alterations or repairs: Provided that the stipulated time period shall not apply if the plan of work is drawn up by an approved asbestos inspection authority;
 - a copy of the approved plan of that work, which has been signed by the approved asbestos inspection authority, the employer and, if the person performing that work is not the employer or self-employed person, the mandatory of the employer or self-employed person, is submitted to the provincial director at least 14 days prior to commencement of such demolition work: Provided that an inspector may allow a shorter period for such submission; and
 - copies of approved standardised procedures for demolition work are submitted to the provincial director at least 14 days prior to commencement of that work; and
- during and after the completion of demolition work, take steps to ensure that—
 - all asbestos and materials containing asbestos are handled and disposed of in accordance with these regulations;
 - all persons exposed to or likely to be exposed to asbestos are issued with appropriate personal protective equipment and that such equipment is used properly; and
 - the premises, structure or area are thoroughly checked to ensure that all asbestos waste has been removed.

Training

Before any employee (inclusive of construction contractors) is exposed or may be exposed to asbestos dust Eskom must ensure that the employees is adequately and comprehensively informed and trained, on both practical aspects and theoretical knowledge, with regard to—

- the contents and scope of these Regulations;
- the potential sources of exposure, including the recognition of derelict asbestos-containing materials;
- the potential health risk caused by exposure to asbestos, including the health risks to employees' families and others, which could result from taking home asbestos contaminated equipment and clothing, and the dramatically increased risk of lung cancer for asbestos workers who smoke;
- the measures taken by the employer to protect an employee against any risk from exposure;
- the precautions to be taken by the employee to protect himself or herself against the health risks associated with the exposure, which precautions include the wearing and use of protective clothing and respiratory protective equipment;
- the necessity, correct use, maintenance and limitations of protective equipment, facilities and engineering control measures provided;
- the assessment of exposure, the purpose of air sampling, the necessity for medical surveillance and the long term benefits and limitations thereof;
- the occupational exposure limit and its meaning;
- the importance of good housekeeping at the workplace and personal hygiene;
- the safe working procedures regarding the use, handling, processing, and storage of any material containing asbestos, which procedures include the correct use of control measures to limit the spread of asbestos dust outside the work area, and to limit the exposure of workers inside the work area as far as is reasonably practicable;
- procedures to be followed in the event of an accidental spillage or any other similar emergency situation likely to result in the release of asbestos dust;
- procedures for reporting and correcting defects likely to result in the release of asbestos dust;
- safe disposal of asbestos waste;
- procedures for record keeping;

Eskom shall ensure, as far as is reasonably practicable, that any other persons other than employees who may be exposed to asbestos are given adequate information, instruction and training.

Eskom shall keep a record of any training, both practical and theoretical, that was given to an employee and construction contractors.

Eskom shall give instructions in writing of the procedures to be followed in the event of an accidental spillage or any other similar emergency situation likely to result in the release of asbestos dust to the drivers of vehicles carrying asbestos or asbestos-containing material, that has the potential of causing environmental pollution or affecting human health.

Duties of persons who may be exposed to asbestos

Any person who is or may be exposed to asbestos in the workplace, shall obey any lawful instruction given by or on behalf of Eskom or the construction contractor, regarding—

- the prevention of asbestos dust from becoming airborne;

- the wearing and use of personal protective equipment and clothing;
- the wearing of monitoring equipment to measure personal exposure to asbestos;
- the cleaning up and disposal of any material containing asbestos;
- housekeeping at the workplace, personal hygiene, good environmental and health practices, including eating, drinking and smoking in designated places provided; and

Medical surveillance

Eskom shall ensure that an employee is under the medical surveillance of an occupational medical practitioner if an employee is exposed or is likely to be exposed to asbestos dust exceeding the Occupational Exposure Limit (OEL) for asbestos.

Respirator zone

Eskom shall ensure that—

- where the concentration of regulated asbestos fibres in the air is, or may be, such that the exposure of persons in that workplace exceeds the OEL for asbestos without the wearing of respiratory protective equipment, is zoned as a respirator zone;
- a respirator zone is clearly demarcated and identified by notice indicating that the relevant area is a respirator zone and that the respiratory protective equipment and protective clothing must be worn there;
- no person enters or remains in a respirator zone unless he or she wears the required respiratory protective equipment and protective clothing; and
- the reason why the OEL for asbestos is exceeded is identified and action is taken, as soon as is reasonably practicable, to lower the concentration of asbestos in the air by means other than respiratory protective equipment, so that it does not exceed the OEL for asbestos.

Cleanliness of premises and plant

Eskom shall take steps to ensure, as far as is reasonably practicable, that—

- cleaning is carried out by vacuum-cleaning equipment with a filtration efficiency of at least 99 per cent for particles one micrometre in size, or in such other manner that asbestos dust neither escapes nor is discharged into the air to such an extent that it contaminates any workplace or the environment;
- the vacuum-cleaning equipment is regularly serviced and its external surfaces are kept in a clean state and free from asbestos dust; and
- where the use of vacuum-cleaning equipment is impracticable, the relevant surfaces are first dampened and that persons undertaking such cleaning are wearing appropriate protective clothing and respiratory protective equipment.

Releasing of asbestos dust into the environment or water systems

Eskom shall ensure that the release of asbestos dust into any environment or water system complies with the provisions of the Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965), the Environment Conservation Act, 1989 (Act No. 73 of 1989), the National Water Act, 1998 (Act No. 36 of 1998), and the National Environmental Management Act, 1998 (Act No. 107 of 1998).

In respect of asbestos dust which may be released into any water system, the following applies:

- asbestos contaminated water must be passed through a filtration system before being released into any environment or water system; and
- a suitable water filtration system must be used which will ensure that the asbestos being released or entering into any environment or water system are reduced as far as is reasonably practicable;
- contaminated parts of the filtration system, when discarded, are disposed of as asbestos waste; and
- appropriate measures are taken to prevent the release of asbestos dust into the environment arising from the transport of asbestos.

Asbestos cement sheeting and related products

When dismantling of any asbestos-cement roof sheeting, wall panelling, gutters, fascia boards and related products Eskom shall ensure that—

- written work procedures are laid down and followed to prevent the release of asbestos dust into the environment;
- cutting or drilling is performed under controlled conditions, including the use of wet methods where possible, and a suitable slow-speed cutter is used, provided that a respirator shall be used by the operator and others at risk of exposure;
- asbestos waste of any form, including dust, is collected and correctly disposed of
- cleaning is done under controlled conditions ensuring that—
 - dry-brushing, scraping, sanding or abrasion techniques are not used;
 - where reasonably practicable, high-pressure water jetting is not used unless in conjunction with a suitable profiled hood that limits dispersal of contaminated water

Personal protective equipment and facilities

Eskom shall provide –

- all persons exposed to asbestos at the workplace with suitable protective clothing; and
- a person with suitable respiratory protective equipment to ensure that the person's exposure is adequately controlled.

Where respiratory protective equipment is provided, Eskom shall ensure that—

- the relevant equipment is capable of keeping the exposure level at or below the OEL for asbestos;
- the relevant equipment is correctly and properly used;
- information, instruction, training and supervision that are necessary with regard to the use of the equipment are provided to the persons; and
- the equipment is kept in good condition and efficient working order.

Eskom shall, as far as is reasonably practicable—

- issue no personal protective equipment to a person, unless such equipment is cleaned, decontaminated and, where appropriate, sterilised;
- provide separate containers or storage facilities for personal protective equipment when not in use; and
- ensure that all personal protective equipment not in use is stored only in the place provided.

Eskom shall, as far as is reasonably practicable, ensure that all personal protective equipment contaminated with asbestos dust is cleaned and handled in accordance with the following procedures:

- Where the equipment is cleaned on the premises, care shall be taken to prevent contamination during handling, transport and cleaning;
- Where the equipment is sent off the premises to a contractor for cleaning purposes—
 - the equipment shall be packed in impermeable containers;
 - the container shall be tightly sealed and clearly labelled; and
 - the relevant contractor shall be informed of these Regulations and the precautions to be taken for the handling of the asbestos contaminated equipment; and
- Water that is used for decontamination or cleaning of equipment shall be filtered in accordance with stipulations as in this Act before being released into any water system.

Eskom shall ensure that no person removes dirty or contaminated personal protective equipment from the workplace: Provided that where personal protective equipment contaminated with asbestos dust has to be disposed of, it shall be treated as asbestos waste

Labelling, packaging, transportation and storage

Eskom shall, in order to avoid the spread of asbestos dust, take steps, as far as is reasonably practicable, to ensure that—

- the asbestos in storage or being distributed is properly identified, classified and handled in accordance with SABS 0228;
- a container or a vehicle in which asbestos is transported is clearly identified, classified and packed in accordance with SABS 0228 and SABS 0229; and
- any article or substance which contains asbestos is clearly labelled.

Disposal of asbestos

An employer or self-employed person shall as far as is reasonably practicable ensure that—

- all asbestos waste is placed in containers that will prevent the likelihood of exposure during handling;
- all vehicles, re-usable containers or any other similar articles which have been in contact with asbestos waste are cleaned and decontaminated after use, in such a way that such vehicles, containers or similar articles do not cause a hazard inside or outside the workplace concerned;
- all asbestos waste which can cause exposure, is disposed of only on sites specifically designated for this purpose in terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989), and the National Environmental Management Act, 1998 (Act No. 107 of 1998), and in such a manner that it does not cause a hazard inside or outside the site concerned;
- all persons occupied in the collection, transport and disposal of asbestos waste, who may be exposed to that waste, are provided with suitable personal protective equipment; and
- where the services of a contractor for the disposal of asbestos waste are used, a provision is incorporated into the contract stating that the contractor shall also comply with the provisions of these Regulations.

Prohibition

No person shall—

- use compressed air or permit the use of compressed air to remove asbestos dust from any surface or person;

- smoke, eat, drink or keep food or beverages in an area not specifically designated for it or require or permit any other person to smoke, eat, drink or keep food or beverages in such area; or
- apply asbestos by means of spraying or any other similar process or require or permit any other person to apply asbestos by means of such process.

ENVIRONMENTAL SUPERVISION

Eskom Distribution, specifically the Environmental Control Officer (ECO), Clerk of Works (CoW) and Project Coordinator (PC) must inspect the construction site on a regular basis (during pre-construction, construction and post-construction / rehabilitation periods) to confirm the current state of the site and to ensure that the mitigation and rehabilitation measures are applied as specified in the EMP. These officers might make reasonable amendments to the EMP in co-operation with the contractor.

The ECO should undertake at least once-per-month site visits, or more if required to ensure compliance with this EMP; The ECO must follow all health and safety stipulations as per this EMP.

APPOINTMENT OF CONTRACTORS

Demolition and construction work may only be carried out by a person who is a *Registered Asbestos Contractor*, as required in terms of Regulation 21 of the Asbestos Regulations, OHSAct (85 of 1993). The contractor must be well aware of all stipulations as per the these Regulations.

The contractor must be handed a copy of the **Asbestos Health Risk Assessment**, dated August 2007 and attached under Appendix D of the Basic Assessment Report. Amongst many other, the contractor should be made aware of the following:

Ease with which asbestos dust may be released and the extent to which a person may be exposed

1. The tailings that were used as aggregate in the substation consist of asbestos in its raw mineral form.
2. Asbestos tailings are made up of mined product that is considered to be commercially worthless due to its fibre length or other quality constraints.
3. The tailings were completely exposed and years of weathering, as well as vehicular and pedestrian traffic have exposed the raw fibre to a significant extent.
4. Loose asbestos fibres, visible with the naked eye inside the substation, splits along the weak crystalline bond that attaches them together into small, microscopic fibres.
5. The microscopic fibres may be dispersed by wind and water. Vehicles and people that enter the substation aggravate the situation as they carry visible and microscopic fibres with them when they leave. Samples not only revealed the heavy presence of microscopic fibres in the soil of the substation, but also revealed that it is dispersed by rainwater and traffic down the access road and along storm water drains towards nearby dwellings.
6. Eskom employees and contractors that enter the substation are presented with a significant risk of exposure to airborne asbestos fibres whenever they visit the substation. The risk is aggravated by the fact that they may carry asbestos fibres on their shoes with them into their vehicles when they leave. The contaminated vehicle cabin may become a secondary source of exposure to the employee and

anybody else who comes into direct contact with the vehicle for weeks to come. Asbestos may also contaminate offices and family homes in this way.

7. Penge Substation is also a significant source of environmental asbestos pollution, dispersed by wind and water, which threatens the health and safety of some 3000 citizens that reside in the town of Penge. The risk is aggravated by the fact that Penge is already heavily polluted as a result of years of dust pollution during the operational phase of the mine.
8. Although extensive rehabilitation of exposed asbestos tailing dumps was undertaken in the late 1990s by government, an inspection of the town and its surrounds revealed that asbestos was visible everywhere. Raw asbestos could be seen lying in abandoned mine buildings. Whole pieces of asbestos rock can be picked up everywhere and the vegetation on the rehabilitated asbestos dumps is grazed by goats, leaving them vulnerable to rainwater erosion.

Details of expected exposures

1. Eskom employees that conduct technical, maintenance and cleaning duties at Penge Substation are expected to have exposures between 0,001 f/ml and 0,1 f/ml during each visit to the substation. Exposures may be higher, depending on the duration of each visit and the nature of the work. The duration of exposure may be aggravated by asbestos that is present in contaminated vehicles, clothing and shoes.
2. Construction and maintenance staff that work inside the yard and are involved in digging into the tailings, lashing, hoeing and other similar tasks may be exposed to regulated asbestos fibre concentrations that range between 0,1 f/ml and 1,0 f/ml.
3. The risk of asbestosis and lung cancer only becomes significant where a person is exposed to a concentration of 1,0 f/ml for 25 years, or 5,0 f/ml for 5 years. (Note that both exposures calculate to 25 fibre man-years).
4. Exposure to regulated asbestos fibres emanating from Penge substation presents Eskom employees, contractors and the general public with a high risk of contracting mesothelioma. Repeated exposures to low levels of amphibole asbestos has been shown to cause this disease, which is rapidly fatal. No safe level of exposure has been established in the prevention of mesothelioma, and it must be emphasised that any exposure carries some risk. The long delay between first exposure and the onset of the disease ranges from 20 to 40 years.
5. Experience has shown that up to 40% of residents environmentally exposed to asbestos may contract symptoms of asbestos exposure. At present, Penge Substation increases the risk of asbestos related diseases amongst citizens of the community.

General

- The EMP will be made binding on all Contractors operating on the site and will be included in contract documents of all appointed contractors. Non-compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.
- 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:
 - 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 the Forest Act (Act 122 of 1984).
 - 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 general waste material generated during and after construction should be disposed of at a permitted landfill site and an agreement letter between the municipality and the contractor regarding the disposal of such waste material should be obtained.
- The contractor must be aware of all regulations regarding the transporting of hazardous waste (asbestos) and adhere thereto at all times.

ASBESTOS WARNINGS

- The substation and laydown areas must be zoned as an asbestos zone by displaying SANS Symbolic Safety Sign WW 13, denoting “*danger asbestos*” in a conspicuous place at the entrance.
- Employees and contractors visiting the site must be informed of the dangers to their health that are presented by asbestos as required in terms of Regulation 5 of the Asbestos Regulations, OHSAct (85 of 1993).
- Employees and contractors that visit the substation must be provided with FFP2 respirators, disposable clothing and footwear **before** they enter the substation yard. Provision must be made for the safe disposal of contaminated PPE before they re-enter their vehicles. Employees must receive formal training in decontamination procedures.
- Vehicles that were used in the past by employees who visited the substation must be thoroughly dedusted with a vacuum cleaner fitted with HEPA filters. It must be understood that a domestic vacuum cleaner is not suitable for this task and may only serve to further spread asbestos fibres into the environment. This task could be done by the registered asbestos contractor.

ON-SITE COMMUNICATION PROCEDURE

On site start-up / kick-off meeting

- The mandatory on-site start-up meeting that is conducted preferably 14 days but not less than 5 working days prior to commencement of any site/camp establishment, earthworks and/or construction activities and will relate to additional discussed information that must be complied with during the entire construction phase.
- All site-specific issues and arrangements as discussed and agreed on at the site start-up meeting.
- Information pertaining to specific site construction agreements that was discussed at the kick-off meeting on site by all the relevant parties and agreed on and must be recorded and included as part of the EMP.
- Any changes made to the EMP as per the agreements between all parties on site must still fall within the conditions of the Environmental Authorisation.
- At the site start-up meeting, the following issues must be discussed:

- The Construction EMP & other relevant site documents
- Project to be discussed and all uncertainties are cleared
- Method statement/s to be discussed
- Access routes
- Road and construction area to be demarcated
- Materials stockpile and lay down areas to be demarcated
- Method of stockpiling to be discussed
- Firefighting procedures
- Mandatory firefighting equipment & fire preventative measures
- Mandatory site equipment and facilities
- Solid waste facilities and removal intentions
- Placement, type and service of toilets to be agreed on
- Placement and type of rubbish bins and removal of rubbish to be agreed on
- Environmental Education and awareness training session to all contractors & onsite staff/labour.
- Location & establishment of concrete batching plant facility.

Monthly construction progress meetings

- Environmental matters pertaining to the construction of the project must be included as an agenda item on the monthly project construction progress meeting.
- The ECO must be invited to monthly construction progress meetings to discuss findings of site audits, mitigation measures and other issues arising pertaining to the implementation of the EMP conditions.

Minutes of meetings

- Environmental issues, action items, complaints, incidents and mitigation measures must be recorded in minutes of monthly construction project meetings.
- The ECO must be included in the circulation of minutes of meetings in order to stay informed of construction progress and construction issues as they relate to the receiving environment.

SITE REQUIREMENTS

- A detailed schedule (inclusive of postal addresses and/or fax and e-mail numbers) of key stakeholders is included as the Register of Interested & Affected Parties in Appendix E of the Basic Assessment Report. Liaison with the stakeholders could have the following objectives:
 - 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 Basic Assessment process undertaken for this project;
 - To confirm the contact details of the contractor and Eskom representatives to ensure effective communication during the construction and operational phases of the project.
- Construction workers should wear clearly identifiable clothing that allows for easy recognition of contract workers on private property.
- A copy of this EMP must be on site at all times and submitted to relevant stakeholders should they request it. They can assist Eskom in assuring that the contractor adheres to rules as stipulated and that mitigation measures are applied.

LAYDOWN AREA DURING THE CONSTRUCTION PERIOD

The area to the east of the substation is already highly disturbed and cleared of vegetation to some extent. It is also relatively flat if compared to the areas to the south and east of the substation. It is therefore recommended that this area be used during the construction period as a laydown area for construction material and storage of the demolished steel, rubble, etc. of the substation.

FAUNA

The following general recommendations are made to minimise the impacts of construction on the immediate environment and remaining fauna:

- Close site supervision must be maintained during construction.
- Workers must be limited to areas under construction and access to the undeveloped areas must be strictly regulated (“no-go” areas during construction activities).
- All temporary stockpile areas including litter and dumped material and rubble must be removed on completion of construction. All alien invasive plant should be removed from the site to prevent further invasion.
- Firearms or any other hunting weapons must be prohibited on site.
- Contract employees must be educated about the value of wild animals and the importance of their conservation.
- Educational programmes for the contractor's staff must be implemented to ensure that project workers are alerted to the possibility of snakes being found during vegetation clearance. The construction team must be briefed about the management of snakes in such instances. In particular, construction workers are to go through ongoing refresher courses to ensure that protected snakes, such as Southern African Python, are not killed or persecuted when found.
- Contractual fines must be imposed and immediate dismissal on any contract employee who is found attempting to snare or otherwise harm remaining faunal species.
- No animals should be intentionally killed or destroyed and poaching and hunting should not be permitted on the site.

FLORA

The following general recommendations are made to minimise the impacts of construction on the flora of the area:

- Provision of adequate toilet facilities must be implemented to prevent the possible contamination of ground (borehole) water in the area.
- All temporary stockpile areas including litter and dumped material and rubble must be removed on completion of construction. All alien invasive plant should be removed from the site to prevent further invasion.
- Collection of firewood and traditional medicinal plants is strictly prohibited.
- All alien vegetation should be eradicated on site.
- In areas where degradation has taken place as a result of the construction, a suitably qualified ecologist or rehabilitation specialist should be appointed for the commencement of rehabilitation activities. The specialist should identify areas requiring rehabilitation as well as appropriate seed mixes which are required.

- No open fires shall be allowed on site under any circumstance. The Contractor shall have fire-fighting equipment available on all vehicles working on site, especially during the winter months.

Disturbed areas of natural vegetation as well as cut and fills must be rehabilitated immediately to prevent soil erosion as well as alien invasive vegetation invasion. The use of herbicides shall only be allowed after a proper investigation into the necessity. Eskom's approval for the use of herbicides is mandatory. Application shall be under the direct supervision of a qualified technician. All surplus herbicide shall be disposed of in accordance with the supplier's specifications. All alien vegetation in the total servitude and densifiers creating a fire hazard shall be cleared and treated with herbicides.

It is recommended that a contractor for vegetation clearing should comply with the following parameters:

- The contractor must also be able to identify declared weeds and alien species that can be totally eradicated.
- The contractor must be in possession of a valid herbicide applicators license.

CULTURAL / HERITAGE RESOURCES & PALAEOLOGY

- The existing Penge substation does not contribute to the heritage value of the area and since the land on which the substation is build is already highly disturbed, the chances of finding any archaeological remains are exceptionally slim.
- If, however, any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/John Gribble 021 462 5402) must be alerted. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Mimi Seetelo 012 320 8490), must be alerted immediately. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required;

COMPLIANCE WITH SPECIFICALLY IDENTIFIED LEGAL REQUIREMENTS

Asbestos Regulations, 2001 (Government Notice. R: 155; 10 February 2002)

These Regulations aim to ensure the health and safety of employers, employees as well as the environment. These Regulations must be very strictly adhered to at all times.

The National Water Act (Act No 36 of 1998)

There are no freshwater resources in the direct vicinity of the site and it is not required to apply for a Water Use License for this project.

National Forest Act (Act 122 of 1984) and/or the Nature Conservation Ordinance of 1974 (Ordinance 19 of 1974) and / or the Nature Conservation Regulations 955 of 1975

Protected Fauna Species / Permits

The Department of Agriculture, Fisheries and Forestry (Forestry Branch) developed a list of protected tree species. In terms of Section 15(1) of the National Forests Act, 1998, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a license or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated. Trees are protected for a variety of reasons, and some species require strict protection while others require control over harvesting and utilisation. The Department will have to be approached to obtain the required permits for the removal of any protected tree species.

For this Penge project there are however no trees within the substation yard and it would not be required to cut any protected trees in the proposed laydown area during the construction period.

CONSTRUCTION SITE

- Accommodation for labourers must either be limited to guarding personnel on the construction site (with labourers transported daily to and from the site) or a separate fenced and controlled area where proper accommodation and relevant ablution and washing facilities are provided.
- The location of the construction site must be negotiated with the relevant landowner and specifications of the landowner must be adhered to.
- 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.
- Contractors should develop a comprehensive site camp management plan. This should apply even in the case of the limited accommodation camps as discussed above.
- Plan site campsites an appropriate distance from any facility where it can cause a nuisance and could cause a safety hazard.
- Minimise 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).
- Sufficient ablution and proper cooking facilities must be provided at the site camp.
- Deposit solid domestic waste in containers and dispose at municipal waste disposal sites regularly.
- Dispose of liquid waste (grey water) with sewerage.
- Install appropriate facilities at the campsite. Preferably utilise municipal systems (conservancy tanks with periodic removal) or chemical toilets.
- Ensure compliance with stringent daily clean up requirements of site camp inert waste (waste concrete, reinforcing rods, waste bags, wire, timber etc) and dispose at municipal waste disposal sites.

FIRE MANAGEMENT

Eskom will manage the fire risk from a fire risk point of view and the field service office will be in close communication with the fire protection agency in the area.

The following are applicable:

- No fires may be made for the burning of vegetation and waste, neither as source of heat or cooking.
- No open fires are to be made on site – cooking facilities must be provided, particularly for security staff.
- 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 any fauna.
- The adjacent landowners must be informed and/or involved in case of any fire that may pose a threat to their properties.
- It must be ensured that the basic firefighting equipment is supplied to all living quarters, site offices, kitchen areas, workshop areas and stores and be kept available during construction phase.
- Welding gas cutting or cutting of metal will only be allowed inside the working/demarcated areas and with appropriate firefighting equipment at hand.

CONSTRUCTION PHASE

GROUND AND SURFACE WATER

- In all cases, abstraction of water from watercourses for construction purposes will not be allowed. Arrangements must be made prior to construction with the landowners or municipal water must be carted in.
- Under no circumstances must surface or groundwater be polluted.
- Adequate oil containment precautions must be taken.
- If a spill from a construction vehicle occurs it must be reported to ECO with immediate effect. A bio-remediation contractor must be appointed to rehabilitate large oil spills. Small oil spills must be cleaned immediately with an oil spill kit. Spills must be immediately stopped and a drip tray be used to catch any leaks until the risk can be eliminated and mitigation/ rehabilitation measures applied
- Minimise on-site storage of petroleum products.
- Ensure proper maintenance procedures are in place for vehicles and equipment.
- Servicing of vehicles to be done 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.
- All stormwater runoff must be managed efficiently so as to avoid stormwater damage and erosion to adjacent properties.
- During and after construction, stormwater control measures should be implemented especially around stockpiled soil, excavated areas, trenches etc. to avoid the export of soil into any 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.
- Drinking water and water for ablution facilities must be provided to all construction workers on the construction and camp site.

WASTE MANAGEMENT

General Waste

- Expected constructed 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.
- 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.
- Waste separation should be encouraged for recycling purposes.
- Provision must be made for the collection of all general waste materials. Rubbish bags and bins with lids must be provided at various points within the construction corridor and must be emptied on a regular basis.
- Deposit solid domestic waste in containers and dispose at registered municipal waste disposal sites regularly.
- For all waste that is disposed of, Eskom shall obtain waste manifests and disposal certificates, which shall be recorded and reported to the ECO on a monthly basis.
- Liquid waste (grey water) must be disposed with sewerage.

Construction Waste

- Ensure compliance with stringent daily clean up requirements of site camp inert waste (waste concrete, reinforcing rods, waste bags, wire, timber etc) and dispose at municipal waste disposal sites.
- Construction waste must be collected and sold for recycling purposes as far as possible.

Sewage

- Portable ablution facilities must be placed within the construction servitude and must be serviced by registered companies only and on a regular basis. There should be one toilet for every fifteen workers.
- Portable toilets should be emptied in to an authorised disposal facility and an agreement with the concerned municipality should be submitted to this Department.
- No effluent to be dumped in the veld or any watercourse.
- The use of the open veld for ablution is prohibited.

Hazardous Waste

- Oil contaminated waste (soil, cloths used to clean small spills, spill kits, content of drip trays, etc.) must be disposed of at a facility that is registered as a hazardous landfill facility.
- All hazardous substances at the site must be adequately stored and accurately identified, recorded and labelled. All these hazardous substances should be disposed of at a H:H registered waste disposal facility.

- Hydrocarbon (oil, diesel, petrol) waste as well as hydrocarbon containing material must be regarded as hazardous waste and separated from general waste.
- Persons who remove hazardous waste must be appropriately qualified and authorised.

Hazardous waste (asbestos)

- All asbestos contaminated waste (inclusive of soils) must be hauled to a licensed H:H registered waste disposal facility. Please note that if waste is being stored for a period longer than 90 days, a waste licence in terms of the National Waste Act must be obtained from the Department of Water & Sanitation.
- All activities required to remove asbestos from soil must be done by a class A licensed asbestos removalist. The transporter of such waste must be licenced to do so:
 - The *National Environmental Management: Waste Act, 2008 (No. 59 of 2008)*, Section 25 deals specifically with the duties of persons transporting waste and must be adhered to at all times. The person transporting hazardous waste must, before offloading the waste from the vehicle, ensure that the facility or place to which the waste is transported, is authorised to accept such waste and must obtain written confirmation that the waste has been accepted. Any person engaged in the transportation of waste must take all reasonable steps to prevent any spillage of waste or littering from a vehicle used to transport the waste.
- Asbestos contaminated soil must be dampened before being packaged for transport. This prevents the chance of dust and fibres becoming airborne.
- Soil should be carefully transferred to a suitable container, then sealed and labelled as asbestos-containing.

For all waste that is disposed of, Eskom shall obtain waste manifests and disposal certificates, which shall be recorded and reported to the Environmental Control Officer (ECO) on a monthly basis.

PROTECTION OF FAUNA AND FLORA

- No animals or birds may be fed, disturbed, hunted or trapped.
- No plant material may be removed if not part of identified vegetation clearance.

SOIL EROSION

- To cause the loss of soil by erosion is an offence under the Soil Conservation Act, Act No 76 of 1969.) Access roads and site surfaces must be monitored for deterioration and possible erosion. 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.
- 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.
- All vehicle movement must be along existing roads or tracks as far as possible.
- All stormwater runoff must be managed efficiently so as to avoid stormwater damage and erosion to adjacent properties.
- The viability of undertaking construction during the dry months of the year should be investigated in order to overcome possible problems caused by excessive moisture.
- Should any new temporary access roads be required, the following should apply in areas which are prone

to erosion:

- Where a cutting is made, subsoil drains should be installed wherever a perched water table occurs within 900m of the formation in all cuttings and below fills in the alluvial zones.
- It is further critical to manage surface water. Drains should be provided along the top and bottom of all deep cuttings. This is to minimise the flow of surface water and erosion to the exposed cut faces and erosion along the toe of the cuttings.
- Steep sections of the service road must be supplied of sufficient drainage areas to reduce flow velocity of run-off water.
- Any eroded sections must be rehabilitated and part of the management plan must include regular inspections of the water run-off areas.
- If any erosion occurs, rehabilitation must immediately be done.

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

- Construction workers must be extremely careful not to damage any private property. Should any damage occur it should be reported to the ECO and repaired and to a state prior to the damage to the written satisfaction of the landowner and ECO.
- Removal of agricultural products is prohibited.
- No firewood may be collected.
- No open fires are to be made on private property.
- In order to prevent and/or minimise crime, it is required that all construction workers be supplied with controlled serviced accommodation or be supplied with daily transport to and from the site.
- 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 localised areas. All relevant legislation must be adhered to.
- 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 that exclude Sundays and public holidays.
- Sweeping of construction sites, clearing of building rubble and debris and watering of construction sites (storage areas, roads, etc.) must take place on a regular basis.
- All excavated areas must be clearly marked and barrier tape must be placed around them to prevent humans and animals from falling into them.

CULTURAL-HISTORICAL COMPONENT

The subterranean presence of archaeological and/or historical sites, features or artifacts are always a distinct possibility. Care should therefore be taken when development work commences that if any of these are accidentally discovered, a qualified archaeologist be called in to investigate.

POST-CONSTRUCTION PHASE / REHABILITATION

CONSTRUCTION SITE CLEARANCE

- After construction all 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 aluminium to be managed according to Eskom procedures.

REHABILITATION

The services of an Approved Asbestos Inspection Authority must be obtained in order to draft a detailed Plan of Work for the rehabilitation of the substation yard as required in terms of Regulation 21 of the Asbestos Regulations, OHSAct (85 of 1993).

The following recommendations were made in the **Asbestos Health Risk Assessment**, dated August 2007 and attached under Appendix D of the Basic Assessment Report:

- Remove the asbestos tailings from the yard with earthmoving equipment. The material should be thoroughly wetted before and during earthmoving operations.
- Remove a layer of approximately 15cm of soil and treat as contaminated waste.
- Remove contaminated soil in the service road, storm water drains and areas around the substation under controlled conditions.
- Repair exposed surfaces of concrete structures.
- The waste may be hauled to a registered Hazardous Waste Landfill site.
- Cover the entire substation yard with 15 cm of top soil sourced from an uncontaminated area.
- Compact the topsoil.
- Provide a minimum of 10cm (or to Eskom specification) of aggregate to cover the entire yard.

General

- The substation yard should be landscaped to represent the topography of the direct area.
- The site should be planted with a suitable, indigenous grass mix.
- Invasive alien plants that currently exist within the immediate area of the substation yard must be removed and any regrowth prevented and managed for a period of at least 5 years.
- Erosion control measures should be put in place to ensure that no erosion gullies are formed within the new rehabilitated areas.
- 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 temporary access roads should be rehabilitated.

Appendix A

**OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT NO. 85 OF 1993)
Asbestos Regulations, 2001 (Government Notice. R: 155; 10 February 2002)**