

TRANSMISSION SERVICES



ENVIRONMENTAL MANAGEMENT PROGRAMME

EMP

Substation construction/refurbishment work

2006

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1. SCOPE

The scope of this document is to give environmental management guidelines, to the Contractor doing the construction work, in fulfilment of ISO 14001 requirements. This document is part of the contract and supplementary to Eskom's technical specifications. **The recommendations and constraints, as set out in this document are enforceable under the general conditions of contract.**

The EMP has a long-term objective to ensure that:

- 1) Environmental Management considerations are implemented from the design phase of the project,
- 2) The Contractor is able to and shall include any costs of compliance with this EMP into the tender price
- 3) Precautions against environmental damage and claims arising from such damage are taken timeously, and
- 4) The completion date of the contract is not delayed due to environmental problems with the Landowner, Grid staff, Communities or Regulatory Authorities arising during the course of the project execution,
- 5) The asset created conforms to environmental standards required by ISO 14001 and Transmission Policy.

Eskom requires a commitment from the Eskom Project Manager and the Contractor on the following issues:

1. To underwrite Eskom Transmission's Environmental Policy TRMPBAAX3 Rev 2 at all times.
2. Ensure environmental conditions stipulated in the Record of Decision (ROD) are implemented.
3. Resolve problems and claims arising from damage immediately to ensure a smooth flow of operations.
4. To implement this Environmental Management Programme for the benefit of all involved.
5. To preserve the natural environment by limiting destructive actions on site.

The Project Manager and Contractor must take into consideration that this EMP will be implemented and amended as required for the duration of the contract. The management of the environment changes over time and therefore the document shall be updated regularly to ensure environmental management is implemented during all phases of a project.

Responsibility Matrix.

Function	Name + Tel	Responsibility
Project Manager (PM)		Overall management of project and EMP implementation.
Contract Manager (CM)		Contract management.
Site Supervisor (SS)		Site supervision.
Environmental Control Officer (ECO)		Implementation of EMP and liaison between Eskom, Contractor and the Landowner.
Contractor (C)		Implementation and compliance with recommendations and conditions of the EMP, Appoints / delegates a dedicated person to work with ECO when required.
Tx Services Environmental Advisor (Eskom)	John Geeringh 011 800 2465 083 632 7663	Environmental advice and monitoring

(Table to be completed upon contact award)

2. INTRODUCTION

The construction, refurbishment or upgrading of Transmission Substations can have a major impact on the environment. Construction of a new substation and upgrading of an existing facility is also regulated by legislation under the Environment Conservation Act, 73 of 1989. It is thus imperative that precautions are taken to ensure that environmental damage is minimised. This will take a concerted effort from Eskom and the Contractor and detailed planning is of the utmost importance.

The Environmental Control Officer shall convey the contents of this document, the conditions of the Record of Decision from DEAT as well as the Landowner Special conditions to the Contractor site staff and discuss the contents in detail with the Eskom Project Manager and Contractor at a pre-construction meeting. This formal induction training is a requirement of ISO 14001 and shall be done with all main and sub-contractors. Record of the training date, people whom attended and discussion points shall be kept by the ECO.

For all construction and upgrading of substation sites that require new land take, a ROD is obtained from DEAT after completion of the Environmental Impact Assessment (EIA) for the project.

Good relations with the Landowner / legal occupier (hereafter referred to as **Landowner**), Grid staff and Communities need to be established and sustained. This will help in the solving of problems and the prevention thereof. Lines of communication should always be open to ensure proper and timeous reaction to complaints. The contact numbers of the ECO and / or Eskom Site Supervisor shall be made available to the Landowner (for new substation sites and extensions) and Grid staff (for All sites). The reputation of both the Contractor and Eskom is at stake and should be the drive for everybody involved to perform in excellence.

During the construction period for new substations and extensions environmental personnel shall monitor the works, to measure compliance with

the recommendations of the EMP and conditions of the ROD. The Grid Environmental Advisor shall inspect refurbishment and upgrading projects upon completion of the contract. If satisfied the works shall be taken over by the Grid.

3. DESCRIPTION OF THE PROJECT

3.1. SUBTATION

The substation where the work will be performed is _____.

3.2. PROJECT EXECUTION AREA

Construction, refurbishment or upgrading activities are limited to the area as demarcated by Eskom and shown on the site plans. Any area outside Eskom owned property, required to facilitate access, construction camps or material storage areas, shall be negotiated with the Landowner and written agreements shall be obtained.

Should water be required from sources other than Eskom supply, a written agreement shall be reached between the Contractor and the Landowner in the presence of Eskom. **Should the Contractor be required to use water from a natural source, the Contractor shall supply a method statement to that effect.** Strict control shall be maintained and the ECO shall regularly inspect the abstraction point and methods used.

In case of a new substation or an extension to an existing substation, the works area shall be fenced to prevent livestock or local community members from wandering onto site and getting injured. All works shall be limited to the fenced area and the Contractor workforce shall refrain from venturing outside this area onto private property.

No work shall commence until permission is granted from the Environmental Advisor from Transmission Services and the ROD from DEAT has been obtained. The Project Manager shall ensure that all

conditions in the ROD are fulfilled before the Contractor occupies the site. The Grid shall be kept informed of all developments on construction at all times. All the requirements from the Grid must be considered during the construction phase to ensure smooth transition.

3.3. SITE ESTABLISHMENT

Site establishment shall take place in an orderly manner and all amenities shall be installed at Camp sites before the main workforce move onto site. The Contractor camp shall have the necessary ablution facilities with chemical toilets where such facilities are not available at commencement of construction. The Contractor shall supply a wastewater management system that will comply with legal requirements and be acceptable to Eskom. A septic tank system is recommended to ensure the best practice environmental solution.

Where Eskom facilities are available the Contractor shall make use of such facilities where it is viable and negotiated with the Grid. The Contractor shall inform all site staff to make use of supplied ablution facilities and under no circumstances shall indiscriminate excretion and urinating be allowed other than in supplied facilities.

The Contractor shall supply waste collection bins where such is not available and all solid waste collected shall be disposed of at a registered waste dump. A certificate of disposal shall be obtained by the Contractor and kept on file. **Where a registered waste site is not available close to the construction site, the Contractor shall provide a method statement with regard to waste management.** The disposal of waste shall be in accordance with all relevant legislation. **Under no circumstances may solid waste be burned on site unless a suitable incinerator is available.**

3.4. WORKSHOP AND EQUIPMENT STORAGE AREAS

Where possible and practical all maintenance of vehicles and equipment shall take place in the workshop area. During servicing of vehicles or equipment, a

suitable drip tray shall be used to prevent spills onto the soil, especially where emergency repairs are effected outside the workshop area. Leaking equipment shall be repaired immediately or be removed from site to facilitate repair. All potentially hazardous and non-degradable waste shall be collected and removed to a registered waste site. A **certificate of disposal** shall be obtained by the Contractor and kept on file.

Workshop areas shall be monitored for oil and fuel spills and such spills shall be cleaned and re-mediated to the satisfaction of the ECO. The Contractor shall be in possession of an emergency spill kit that must be complete and available at all times on site.

The following shall apply to hazardous substance spills:

- All contaminated soil / yard stone shall be removed and be placed in containers. Contaminated material can be taken to one central point where bio-remediation can be done.
- Smaller spills can be treated on site.
- A specialist Contractor shall be used for the bio-remediation of contaminated soil where the required remediation material and expertise is not available on site.
- All spills of hazardous substances must be reported to the ECO and appointed Transmission Engineering Environmental Advisor (**Tx Key Performance Indicator requirement**).

3.5. STORAGE AREAS OF HAZARDOUS SUBSTANCES

All hazardous substances shall be stored in suitable containers and storage areas shall be bunded. This includes all carbon substances like fuel and oil as well as herbicides and battery acid. A register shall be kept on all substances and be available for inspection at all times. Areas shall be monitored for spills and any spills shall be contained, cleaned and rehabilitated immediately. Any leaking containers shall be repaired or removed from site (See above for actions after spills).

4. PHYSICAL ISSUES AND THEIR CONTROL

4.1. SUBSTATION TERRAIN AREA

Where terracing is required, topsoil shall be collected and retained for the purpose of re-use later to rehabilitate disturbed areas not covered by yard stone. Such areas include terrace embankments and areas outside the high voltage yards. Where required, all sloped areas shall be re-vegetated and stabilised to ensure proper rehabilitation is effected. These areas can be stabilised using design structures or vegetation as specified in the design to prevent erosion of steep embankments. The contract design specifications and Environmental Impact Report (EIR) recommendations shall be adhered to and implemented strictly.

The retained topsoil shall be spread evenly over areas to be rehabilitated and suitably compacted to effect re-vegetation of such areas to prevent erosion. Where required re-vegetation can also be enhanced using a vegetation seed mixture as described in section 4.10 of this EMP.

(Specifics about project)

4.1.1. Management objectives

- Minimise scarring of the soil surface and land features other than on site
- Minimise disturbance and loss of topsoil from site
- Rehabilitate all disturbed areas in the substation area

4.1.2. Measurable targets

- No visible erosion scars once construction is completed
- All disturbed areas successfully rehabilitated

4.2. NATURAL DRAINAGE'S

Under no circumstances shall the contractor interfere with any watercourses in the vicinity of the site. Should deviation of such watercourses be required as

part of the contract design specification, the specifications shall be adhered to strictly. The Environmental Control Officer shall ensure that all watercourses are adequately protected to prevent downstream siltation due to erosion on site. Rubble from the construction process shall be removed from site and may under no circumstances be dumped into any natural drainage channels. The normal flow of runoff water must not be impeded, as this will enhance erosion.

4.2.1. Management objectives

- Avoid damage to natural drainage channels
- Avoid damage to river and stream embankments
- Minimise erosion of embankments and subsequent siltation of rivers and streams

4.2.2. Measurable targets

- No damage to natural drainage channels
- No damage to river and stream banks
- No visible erosion scars on embankments once construction is completed

4.3. ACCESS ROADS TO THE SITE

Planning of access routes to the site for construction purposes shall be done in conjunction between the Contractor, Eskom and the Landowner. All agreements reached should be documented and no verbal agreements should be made. The Contractor shall properly mark all access roads. Roads not to be used shall be marked with a " **NO ENTRY** " sign.

Where new access roads are constructed, this must be done according to design and contract specifications. Drainage channels shall be suitably designed to ensure erosion does not occur, especially at the outflows. The new access road shall be designed to allow for the natural flow of water where required. Crossing of dongas and eroded areas on access routes to new substation sites shall be thoroughly planned and installed according to design and contract specifications. All areas susceptible to erosion shall be protected

with suitable erosion control measures from the onset of the project. Prevention is the total aim as restoration is normally very difficult and costly.

Where necessary suitable measures shall be taken to rehabilitate damaged areas next to the newly constructed road.

4.3.1. Management objectives

- Minimise damage to existing access roads
- Minimise damage to environment due to construction of new access roads
- Minimise loss of topsoil and enhancement of erosion
- Minimise impeding the natural flow of water

4.3.2. Measurable targets

- No claims from Landowners due to damage on existing access roads
- No erosion visible on access roads three months after completion of construction
- No loss of topsoil due to runoff water on access roads
- No interference with the natural flow of water

4.4. CONSTRUCTION RUBBLE DISPOSAL

The Contractor shall dispose of all excess material on site in an appropriate manner and at a registered landfill. All packaging material shall be removed from site and disposed of and not burned on site. A negotiated landfill may be used but when it is closed up, the rubble shall be compacted and there shall be at least 1m of soil covering the waste material. No landfill may be used without the consent from the Landowner. No non-biodegradable materials shall be disposed of in any unregistered waste site.

No material shall be left on site that may harm man or animals. Broken, damaged and unused spares such as porcelain, glass, nuts, bolts and washers shall be picked up and removed from site. Surplus concrete may not be dumped indiscriminately on site, but shall be disposed of in designated

areas as agreed by the Landowner. Concrete trucks shall not be washed on site after depositing concrete into foundations. Any spilled concrete shall be cleaned up immediately.

4.4.1. Management objectives

- To keep the site neat
- Disposal of construction rubble in an appropriate manner
- Minimise litigation
- Minimise Landowner complaints

4.4.2. Measurable targets

- No construction rubble left lying around on site
- No incidents of litigation
- No complaints from Landowners

4.5. SITE CLEARING

Vegetation clearing to allow for site establishment as well as construction purposes will sometimes be required. Vegetation can be cleared mechanically with a bulldozer where terracing is required, but should be cleared by hand on other areas. All alien vegetation shall be eradicated from site during the project. Indigenous vegetation that does not pose any risks to the operation of the substation upon completion of the contract should be retained for esthetical purposes. **Such vegetation shall be identified during design and clearly indicated on the site plans.**

Protected or endangered species of plants shall be retained where possible. Where such species have to be removed due to interference with structures, the necessary permission and permits shall be obtained by the **ECO from Provincial Nature Conservation**, prior to commencement of site works. Search, rescue and replanting of indigenous, valuable and protected species is highly recommended where possible and viable.

The use of herbicides shall only be allowed after a proper investigation into the type to be used, the long-term effects and the effectiveness of the agent.

Eskom's guidelines regarding the use of herbicides (TRR/S91/032) shall be adhered to strictly. 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.

The Contractor for vegetation clearing shall comply with the following parameters:

- **The contractor must have the necessary knowledge to be able to identify different species.**
- **The contractor must 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 licence.**

NATURAL FEATURES SHALL BE TAKEN INTO CONSIDERATION DURING DESIGN AND WHERE POSSIBLE THESE SHALL BE PROTECTED UNLESS THEY WILL INTERFERE WITH THE OPERATION OF THE SUBSTATION.

(Specifics about project)

4.5.1. Management objectives

- Minimise unnecessary damage to vegetation
- Keep site as natural looking as possible
- Minimise possibility of erosion due to removal of vegetation
- Minimise removal of plant material on river and stream embankments
- Minimise damage to natural features

4.5.2. Measurable targets

- Only vegetation cleared as required for site construction purposes
- No vegetation interfering with structures and statutory requirements upon completion of the contract
- No de-stumping of vegetation on river and stream embankments

- No visible erosion scars three months after completion of the contract due to vegetation removal
- No visible damage to the vegetation outside the site one year after completion of the contract due to herbicide leaching
- No litigation due to unauthorised removal of vegetation
- No unnecessary damage to natural features

4.6. FENCING REQUIREMENTS

The site shall be fenced to prevent any loss or injury to persons or livestock during the construction phase. All Eskom gates shall be fitted with locks and be kept locked at all times during the construction phase, especially when works are stopped during weekends and holidays. All claims arising from gates left open shall be investigated and if at fault, settled in full by the Contractor. If any fencing interferes with the construction process, such fencing shall be deviated until construction is completed. The deviation of fences shall be negotiated and agreed with the landowner in writing.

4.6.1. Management objectives

- Properly installed gates to allow access to the site
- Minimise damage to private fences
- Limit access to Eskom and Contractor personnel

4.6.2. Measurable targets

- No transgressions of the fencing act and therefore no litigation
- No damage to fences and subsequent complaints from Landowners
- All gates kept locked at all times to limit access to construction staff

4.7. FIRE PREVENTION

No open fires shall be allowed on site under any circumstance (The Forest Act, No 122 of 1984). All cooking shall be done in demarcated areas that are safe and cannot cause runaway fires. The Contractor shall have operational fire-fighting equipment available on site, especially during the winter months.

4.7.1. Management objectives

- Minimise risk of runaway veld fires
- Minimise damage to private property

4.7.2. Measurable targets

- No veld fires started by the Contractor's work force
- No claims from Landowners for damages due to veld fires
- No litigation

4.8. NOISE POLLUTION

The Contractor shall ensure that noise levels remain within acceptable limits, especially in built up areas. This applies especially after working hours and during the night.

4.8.1. Management objectives

- Prevention of noise pollution
- Minimise nuisance factor of construction activities

4.8.2. Measurable targets

- No complaints from landowner or community
- No litigation

4.9. CLAIMS FOR DAMAGES

The ECO shall keep a photographic record of any damage to areas outside the demarcated site area. The date, time of damage, type of damage and reason for the damage shall be recorded in full to ensure the responsible party is held liable. All claims for compensation emanating from damage should be directed to the ECO for appraisal. The Contractor shall be held liable for all unnecessary damage to the environment. **A register shall be kept of all complaints from the Landowner, Grid or community. All complaints / claims shall be handled immediately to ensure timeous rectification / payment by the responsible party.**

4.9.1. Management objectives

- Minimise complaints from Landowners and communities
- Prevent litigation due to outstanding claims
- Completion of the contract on time

4.9.2. Measurable targets

- No claims from the Landowner or communities
- All claims investigated and settled within one month
- No litigation due to unsettled claims

4.10. REHABILITATION

All damaged areas shall be rehabilitated upon completion of the contract in accordance with design specifications. In accordance with the Conservation of Agricultural Resources Act, No 43 of 1983, slopes in excess of 2% must be contoured and slopes in excess of 12% must be terraced. Extra seed shall be sown on disturbed areas as directed by the ECO (see below for specifications). Other methods of rehabilitating disturbed sites may also be used at the discretion of the PM to comply with the conditions of the ROD and EMP, e.g. stone pitching, logging, etc. Contour banks shall be spaced according to the slopes. The type of soil shall also be taken into consideration.

A mixture of vegetation seed can be used provided the mixture is carefully selected to ensure the following:

- a) Annual and perennial species are chosen.**
- b) Pioneer species are included.**
- c) All the species shall not be edible.**
- d) Species chosen will grow in the area under natural conditions.**
- e) Root systems must have a binding effect on the soil.**
- f) The final product should not cause an ecological imbalance in the area.**

To get the best results in a specific area, it is a good idea to consult with a vegetation specialist or the local Extension Officer of the Dept of Agriculture.

Seed distributors can also give valuable advice as to the mixtures and amount of seed necessary to seed a certain area. Re-seeding will always be at the discretion of the PM, unless specifically requested by a Landowner / Grid staff.

4.10.1. Management objective

- Minimise damage to topsoil and environment
- Successful rehabilitation of all damaged areas
- Prevention of erosion

4.10.2. Measurable targets

- No loss of topsoil due to construction activities
- All disturbed areas successfully rehabilitated within one year of completion of the contract
- No visible erosion scars one year after completion of the contract

4.11. MATERIAL STORAGE AREAS

Specifications require the protection of Eskom supplied material on site, especially conductor drums. This normally requires that a firebreak be created around a material storage area. These areas are left to rehabilitate on their own which could be disastrous. Once construction has been completed on site and all excess material has been removed, the storage area shall be rehabilitated. If the area was badly damaged, re-seeding shall be done and fencing in of the area shall be considered if livestock will subsequently have access to such an area. For seeding the same provisions as in 4.10 shall apply.

4.11.1. Management objectives

- Minimise disturbance of topsoil
- Successful rehabilitation of disturbed areas

4.11.2. Measurable targets

- No remaining disturbance to vegetation outside the substation area
- No loss of topsoil

- All disturbed areas successfully rehabilitated one year after completion of the contract

4.12. BATCHING PLANTS

In remote areas where batching plants have to be established, these sites shall be negotiated with the Landowner / Grid staff depending on their location. These sites shall be cleared of all excess material upon completion of the contract. Such areas shall be rehabilitated to their natural state. Any spilled concrete shall be removed and soil compacted during construction shall be ripped, levelled and re-vegetated.

4.12.1. Management objectives

- Minimise complaints from Landowners / Grid staff
- Successful rehabilitation of disturbed areas

4.12.2. Measurable targets

- No complaints from Landowners / Grid staff
- All disturbed areas successfully rehabilitated one year after completion of the contract

4.13. OLD EQUIPMENT

All old equipment removed during refurbishment or upgrading projects shall be stored in such a way as to prevent pollution of the environment. Oil containing equipment shall be stored to prevent leaking or be stored on drip trays should such equipment already be leaking. All scrap steel shall be stacked neatly and any disused and broken insulators shall be stored in containers.

Once material has been scrapped and the contract has been placed for removal, the Contractor shall ensure that any equipment containing pollution causing substances is removed in such a way as to prevent spillage and pollution of the environment. The Contractor shall also be equipped to contain and clean up any pollution causing spills. Disposal of unusable material shall

be at a registered waste disposal site and a certificate of disposal shall be obtained and copied to Eskom.

4.13.1. Management objectives

- To prevent pollution of the environment
- Prevention of litigation due to illegal dumping

4.13.2. Measurable targets

- No complaints from Landowners / Grid staff / Communities
- No pollution of the environment
- No litigation due to illegal dumping

4.14. TRANSPORT OF EQUIPMENT

All equipment moved onto site or off site during a project is subject to the legal requirements as well as Eskom specifications for the transport of such equipment. Oil filled equipment such as CT's, VT's and capacitor cans have specific safety requirements regarding their handling, transport and storage. The Contractor shall meet these safety requirements under all circumstances. All equipment transported shall be clearly labelled as to their potential hazards according to specifications. All the required safety labelling on the containers and trucks used shall be in place.

The Contractor shall ensure that all the necessary precautions against damage to the environment and injury to persons are taken in the event of an accident.

4.14.1. Management objectives

- Safe handling and transport of equipment
- Safe handling and transport of hazardous substances
- Minimise environmental pollution and damage

4.14.2. Measurable targets

- All equipment delivered to site in tact
- No spillage of hazardous substances

- No litigation due to environmental pollution

5. SOCIAL ISSUES AND THEIR CONTROL

5.1. SANITATION

The Contractor shall install mobile chemical toilets on. Staff shall be sensitised to the fact that they should use these facilities at all times. No indiscriminate excretion or urinating on site shall be allowed. Ablution facilities shall be within 100m from workplaces but not closer than 50m from any natural water bodies. There should be enough toilets available to accommodate the workforce (minimum requirement 1: 20 workers). Toilets shall be serviced regularly and the ECO shall inspect toilets regularly to ensure compliance to health standards.

5.1.1. Management objectives

- Ensure that proper sanitation is achieved
- Prevent spreading of disease

5.1.2. Measurable targets

- No complaints received from Landowners or Grid staff regarding sanitation
- No litigation or compensation claims

5.2. PREVENTION OF DISEASE

The Contractor shall take all the necessary precautions against the spreading of disease such as measles, foot and mouth, etc. especially under livestock. A record shall be kept of drugs administered or precautions taken and the time and dates when this was done. This can then be used as evidence in court should any claims be instituted against Eskom or the Contractor.

5.2.1. Management objectives

- Prevent litigation due to infestation of livestock
- Prevent spreading of sexually transmitted diseases

5.2.2. Measurable targets

- No complaints from Landowners / Communities
- No litigation

5.3. INTERACTION WITH AFFECTED PARTIES

The success of any project depends mainly on the good relations with the affected Landowner, Communities and Grid staff. It is therefore required that the ECO and the Contractor establish good relations with all the affected parties at the substation site.

All negotiations for any reason shall be between the ECO, the affected parties and the Contractor. **NO** verbal agreements shall be made. All agreements shall be recorded in writing and all parties shall co-sign the documentation.

The affected parties shall always be kept informed about any changes to the construction programme should they be involved. If the ECO is not on site the Contractor should keep the affected parties informed. The contact numbers of the Contractor and the ECO shall be made available to the affected parties. This will ensure open channels of communication and prompt response to queries and claims.

All contact with the affected parties shall be courteous at all times. The rights of the affected parties shall be respected at all times.

5.3.1. Management objectives

- Maintain good relations with affected parties

5.3.2. Measurable targets

- No delays in the project due to interference from affected parties

5.4. LITTERING CONTROL

Littering by the employees of the Contractor shall not be allowed under any circumstances. The ECO shall monitor the neatness of the work sites as well as the Contractor campsite (See also 3.3).

5.4.1. Management objectives

- Neat workplace and site

5.4.2. Measurable targets

- No complaints from affected parties

5.5 DUST POLLUTION

The Contractor shall be responsible for dust control on site to ensure no nuisance is caused to the Landowner, neighbouring Communities or Grid staff at the substation. Watering of access roads is recommended, as this is normally the greatest cause of dust pollution. Speed limits can also be effected, especially on private dirt roads leading to the site. Any complaints or claims emanating from the lack of dust control shall be attended to immediately by the Contractor.

5.5.1. Management objectives

- Site works does not cause a nuisance to other people in the area

5.5.2. Measurable targets

- No formal complaints or claims arising due to dust pollution

5.6. AESTHETICS

The site shall be kept visually and aesthetically pleasing, especially in and around the Contractor camp. The ECO shall regularly inspect the site to ensure that it is neat and clean. Where required the campsite shall be screened by the Contractor to ensure that there is no unacceptable visual intrusion in the area of the site. Screening can be done by use of shadecloth or corrugated fencing.

5.6.1 Management objectives

- Aesthetically pleasing works area, campsite and storage areas

5.6.2. Measurable targets

- No complaints from affected parties on or around the site

6. BIOLOGICAL ISSUES AND THEIR CONTROL

6.1. FAUNA

The Contractor shall under no circumstances interfere with livestock without the Landowner or Community members being present. This includes the moving of livestock where they interfere with construction activities. Should the Contractors workforce obtain any livestock for consumption, they must be in possession of a written note from the owner. The transportation of meat for consumption shall take into consideration any legal requirements regarding the spreading of disease. No poaching shall be tolerated under any circumstances.

6.1.1. Management objectives

- Minimise disruption of farming activities
- Minimise disturbance of animals
- Minimise complaints and litigation

6.1.2. Measurable targets

- No stock losses where construction is underway
- No complaints from Landowners and Communities
- No litigation concerning stock losses and animal deaths

6.2. FLORA

Protected or endangered species may occur on the site. Special care should be taken not to damage or remove any such species unless absolutely necessary. Permits for removal must be obtained **from Provincial Nature Conservation** should such species be affected. All plants not interfering with the operation of the substation shall be left undisturbed, clearly marked and indicated on the site plan. **Collection of firewood outside the site area is strictly prohibited** (refer also 4.5 and conditions of the ROD where applicable)

6.2.1. Management objectives

- Minimal disturbance to vegetation where such vegetation does not interfere with construction and operation of the substation
- Prevention of litigation concerning removal of vegetation

6.2.2. Measurable targets

- No litigation due to removal of vegetation without the necessary permits

6.3. HERBICIDE USE

Herbicide use shall only be allowed with the approval of Eskom and according to contract specifications. The application shall be according to set specifications and under supervision of a qualified technician. The possibility of leaching into the surrounding environment shall be properly investigated and only environmentally friendly herbicides shall be used (See also 4.5).

6.3.1. Management objectives

- Control over the use of herbicides

6.3.2. Measurable targets

- No signs of vegetation dying due to leaching of herbicides one year after completion of the contract
- No Landowner complaints and litigation

7. CULTURAL ISSUES AND THEIR CONTROL

7.1. ARCHAEOLOGY

The position of any known sites shall be shown on the final design plans. Such areas shall be marked as no go areas. Artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits shall be obtained from the South African Heritage Resources Association (SAHRA) should the proposed site affect any world heritage sites or if any heritage sites are to be destroyed or altered.

Should any archaeological sites be uncovered during construction, their existence shall be reported to Eskom immediately, John Geeringh to be informed at 011 800 2465 or the Grid Environmental Advisor.

7.1.1. Management objectives

- Protection of archaeological sites and land considered to be of cultural value
- Protection of known sites against vandalism, destruction and theft
- The preservation and appropriate management of new archaeological finds should these be discovered during construction

7.1.2. Measurable targets

- No destruction of or damage to known archaeological sites
- Management of existing sites and new discoveries in accordance with the recommendations of the Archaeologist

7.2. MONUMENTS / HISTORICAL SITES

All monuments and historical sites shall be treated with the utmost respect. Any graves shall be clearly marked and treated as no go areas. No destruction of any site shall be allowed. Should it be necessary to remove any graves, the necessary procedures shall be followed and permits obtained.

7.1.1. Management objectives

- Protection of sites and land considered to be of cultural value
- Protection of known sites against vandalism, destruction and theft
- The preservation and appropriate management of new finds should these be discovered during construction

7.1.2. Measurable targets

- No destruction of or damage to known sites
- Management of existing sites and new discoveries in accordance with legislation
- No litigation due to destruction of sites

7.3. FARMHOUSES / BUILDINGS

Most Landowners will see the construction period as interference with their daily activities. There will be a negative attitude towards the whole construction process. Landowners are always apprehensive toward changes they do not control and strangers on their properties. If and where the substation is close to any inhabited area, the necessary precautions shall be taken by the Contractor to safeguard the lives and property of the inhabitants. The Contractor shall under no circumstances interfere with the property of Landowners, Grid staff or nearby Communities.

7.3.1. Management objectives

- Control over actions and activities in close proximity to inhabited areas

7.3.2. Measurable targets

- No complaints from Landowners, Grid staff or Communities
- No damage to private property

7.4. INFRASTRUCTURE

No interruptions other than those negotiated shall be allowed to any essential services. Damage to infrastructure shall not be tolerated and any damage

shall be rectified immediately by the Contractor. A record of any damage and remedial actions shall be kept on site.

All existing private access roads used for construction purposes, shall be maintained at all times to ensure that the local people have free access to and from their properties. Speed limits shall be enforced in such areas and all drivers shall be sensitised to this effect.

Any possible disruptions to essential services must be kept to a minimum and should be well advertised and communicated to the Landowners and surrounding Communities. Care must be taken not to damage irrigation equipment, lines, channels and crops, as this could lead to major claims being instituted against Eskom and the Contractor. The position of all pipelines and irrigation lines in the vicinity of a site must be obtained from the Landowners or local Community and clearly marked. Where required such lines shall be deviated.

7.4.1. Management objectives

- The control of temporary or permanent damage to plant and installations
- Control of interference with the normal operation of plant and installations
- Securing of the safe use of infrastructure, plant and installations

7.4.2. Measurable targets

- No unplanned disruptions of services
- No damage to any plant or installations
- No complaints from Authorities, Landowners and Communities regarding disruption of services
- No litigation due to losses of plant, installations and income

8. REQUIREMENTS DURING CONSTRUCTION PERIOD

1. Proper and continuous liaison between Eskom, the Contractor and Landowners to ensure everyone is informed at all times.
2. The Landowners shall be informed of the starting date of construction as well as the phases in which the construction shall take place.
3. The Contractor must adhere to all conditions of contract including the Environmental Management Programme and landowner special conditions.
4. Proper planning of the construction process to allow for disruptions due to rain and very wet conditions.
5. Where existing private roads are in a bad state of repair, such roads' condition shall be documented before they are used for construction purposes. If necessary some repairs should be done to prevent damage to equipment and plant.
6. All manmade structures shall be protected against damage at all times and any damage shall be rectified immediately.
7. The Contractor shall ensure that all damaged areas are rehabilitated to the satisfaction of Eskom and each and every property owner and that outstanding claims are settled.
8. Proper documentation and record keeping of all complaints and actions taken.
9. Regular site inspections and good control over the construction process throughout the construction period.
10. Appointment of an Environmental Control Officer on behalf of the Contractor to implement this EMP as well as deal with all Landowner related matters.
11. Environmental Audits to be carried out during and upon completion of construction (at least two for the project).

9. SITE SPECIFIC PROBLEM AREAS

Site specific problems, if any, are shown on the layout plans (**Design**) and accompanying photographs (Appendix 13.1). No-go areas, if any, are also identified on the plans.

9.1. ESTIMATED QUANTITIES FOR SPECIAL WORKS ON THE SITE

(As per specific contract identified in the EIR, ROD conditions and design where applicable)

10. METHOD STATEMENTS FOR THE CONTRACT

The Contractor shall supply method statements for all works required **as per specific contract requirement**. All agreements regarding **extra works for environmental compliance** shall be in writing and well documented. Work shall only commence upon approval by Eskom.

The ECO shall ensure that all works are in accordance with method statements and contract specifications.

11. SITE DOCUMENTATION / MONITORING / REPORTING

The standard Eskom site documentation shall be used to keep records on site. All documents shall be kept on site and be available for monitoring purposes. Site inspections by an Environmental Audit Team may require access to this documentation for auditing purposes. The documentation shall be signed by all parties to ensure that such documents are legal. Regular monitoring of site works by the ECO is imperative to ensure that all problems encountered are solved punctually and amicably. When the ECO is not available, the Contract Manager / Site Supervisor shall keep abreast of all works to ensure no problems arise.

Regular monthly environmental compliance reports shall be forwarded to the Transmission Engineering Environmental Advisor (appointed per

project) with all information relating to environmental matters. The following **Key Performance Indicators** must be reported on a monthly basis by the ECO:

1. Complaints received from affected parties and actions taken.
2. Environmental incidents, such as oil spills, etc. and actions taken.
3. Incidents possibly leading to litigation and legal contravention's.
4. Environmental damage that needs specialised rehabilitation measures to be taken.

The following documentation shall be kept on site by the ECO:

1. Site daily dairy.
2. Complaints register.
3. Records of all remediation / rehabilitation activities.
4. Copies of monthly reports to the Transmission Engineering Environmental Advisor for auditing purposes.
5. Copy of the Environmental Management Programme.
6. Copy of ROD.
7. Minutes of site meetings including discussions on environmental issues.

12. APPENDICES

1. ASPECT AND IMPACT REGISTER FOR THE PROJECT ACTIVITIES
2. ROD
3. Tx ENVIRONMENTAL POLICY

REFERENCES

Conservation of Agricultural Resources Act, Act 43 of 1983 and amendments.
Corporate directive for the management of PCB, ESKADAAO3 REV 1.
Environmental Impact Assessment of the Project.
Eskom Guidelines for Herbicide Use, TRR/S91/032.
Environment Conservation Act, Act 73 of 1989 and amendments.
Fencing Act, Act 31 of 1963 and amendments.
Hazardous Substances Act, 15 of 1973 and amendments.
Health Act, Act 63 of 1977.
Herbicide Management, ESKPBAAD4 REV 0.
Minerals Act, Act 50 of 1991.
National Environmental Management Act, Act 107 of 1998.
National Forest Act, Act 84 of 1998.
National Heritage Resources Act, Act 25 of 1999.
National Water Act, Act 36 of 1998.
Occupational Health and Safety Act, Act 85 of 1993
Record of Decision and conditions– DEAT.
Standard passive fire protection for oil-filled equipment in High Voltage yards,
TRMASAAQ8 REV 4
Standard for management of PCB, ESKASAAC2 REV1.

**PRO FORMA TO BE SIGNED BY THE CONTRACTOR AND ESKOM
PROJECT MANAGER AT CONTRACT AWARD.**

CONTRACT NAME: _____

CONTRACT NUMBER: _____

ENVIRONMENTAL COMPLIANCE

I _____ ON BEHALF OF _____(C)

I _____ ON BEHALF OF ESKOM

DECLARE AS FOLLOWS:

1. I AM AWARE THAT CONSTRUCTION, REFURBISHMENT OR UPGRADING ACTIVITIES CAN HAVE A MAJOR IMPACT ON THE ENVIRONMENT.
2. I UNDERTAKE TO ADHERE TO THE REQUIREMENTS OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND THE RECORD OF DECISION FROM DEAT.
3. I PLEDGE TO INFORM ALL SITE STAFF OF THEIR INVOLVEMENT IN MANAGING ENVIRONMENTAL IMPACTS ON SITE.
4. I COMMIT TO IMPLEMENTING ENVIRONMENTAL BEST PRACTISE ON SITE AT ALL TIMES DURING THE CONTRACT.

SIGNED: _____ DATE: _____

CONTRACTOR

SIGNED: _____ DATE: _____

ESKOM

Questionnaire to be completed during tender stage by the contractor for evaluation purposes of the tender for substation construction:

PLEASE TICK APPROPRIATE BOX (All yes answers to be accompanied by proof)	YES	NO
ENVIRONMENTAL MANAGEMENT SYSTEM - GENERAL		
1-Is your company ISO 14001 certified?		
2-Is your company ISO 14001 compliant?		
3-Does your company have an Environmental Management System in place?		
4-Does your company have an Environmental Policy?		
5-Does your company have an Environmental Statement?		
6-Is your company in the process of implementing any of the above?		
7-Will you be using sub-contractors during the project?		
8-Does any of your proposed sub-contractors comply with 1-6 above?		
ENVIRONMENTAL MANAGEMENT PROGRAMME - GENERAL		
1-Do you understand the contents and context of this EMP attached to the tender document?		
2-Do you agree to implement the requirements of the EMP on site?		
3-Did you allow for the appointment of a specific person to act as the dedicated Contractor Environmental Control Officer (CECO) on site for the duration of the contract? (As per responsibility matrix on page 5 of the EMP)		
4-Is your CECO qualified to implement the EMP conditions? Please attach CV.		
5-Have you allowed sufficient funds for implementing the requirements of the EMP? (Environmental management requirements)		
ENVIRONMENTAL MANAGEMENT PROGRAMME - SPECIFIC		
1-Did you supply a method statement for water supply?		
2-Did you supply a method statement for solid waste management?		
3-Did you allow for camp wastewater management?		
4-Did you allow for camp and site ablution management?		
5-Did you allow for the installation of sealed and bunded fuel storage areas?		
6-Did you allow for a contained workshop area for servicing of vehicles?		
7-Did you allow for signage to mark access roads to the site?		
8-Did you allow for emergency spill kits to address possible spills of fuel and oil to prevent pollution?		
9-Does the vegetation-clearing contractor comply with section 4.7 of the EMP?		
10-Did you allow for suitable means and materials to safeguard excavations?		