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TRANSNET CAPITAL PROJECTS  
ENVIRONMENTAL MANAGEMENT

**CONSTRUCTION ENVIRONMENTAL  
MANAGEMENT PLAN (CEMP)**

**ENV-STD-001 Rev00**

## Document Control

This document will be managed and controlled in terms of the TCP document management procedure.

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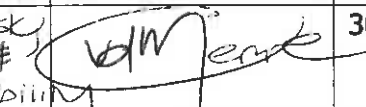
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## 1 Introduction

This Standard describes the main environmental management requirements that the Contractor must comply with during the construction phase to ensure that the environment is considered, negative impacts avoided or minimised, and positive impacts optimised. The Construction Environmental Management Plan (CEMP) and the associated documents also address the requirements in the Environmental Authorisation (EA) that shall apply to the construction phase of the project. It also gives details on issues that will be obliging in ensuring effective compliance. This document is critical to the Contractor and the Contractor's Environmental Officer (EO) as well as any Sub-contractors reporting to the Contractor. The purpose of this Document is to:

- Describe how project environmental risks will be managed during the construction phase;
- Detail the roles and responsibilities of all parties with respect to environmental management during construction;
- Outline the organisational structure for effective implementation of the CEMP;
- Assist the Contractor in understanding the requirements of complying with the CEMP; and
- Provide a set of standards for environmental management during the construction phase.

## 2 Abbreviations/Definitions

<b>CEMP</b>	Construction Environmental Management Plan. Construction EMP including Standard Environmental Specification (SES) and Project Environmental Specification (PES).
<b>Contractor</b>	The <b>Principal Contractor</b> as engaged by Transnet Capital Projects for infrastructure construction operations, including all Sub-contractors appointed by the main contractor of his own volition for the execution of parts of the construction operations; and any other contractor from time to time engaged by Transnet Capital Projects directly in connection with any part of the construction operations which is not a nominated sub-contractor to the Principal Contractor.
<b>Contractor's Environmental Officer</b>	Contractor's Environmental Officer responsible for ensuring compliance with the CEMP on a daily basis.
<b>DEA</b>	Department of Environmental Affairs
<b>ECO</b>	Environmental Control Officer (ECO). Independent environmental specialist who monitors compliance with the EA.

<b>Environment</b>	Surroundings in which the Contractor operates, including air, water, land, natural resources, flora, fauna, humans and their interrelations.
<b>Environmental Aspect</b>	Element of a Contractor's activities, products or services that can interact with the environment and cause an environmental impact (e.g. dust, noise etc).
<b>Environmental Impact</b>	Any change to the environment, whether adverse or beneficial, wholly or partially resulting from a Contractor's activities, products or services.
<b>Environmental Risk</b>	The combination of the likelihood and severity of an unforeseen occurrence/incident/aspect and the impact it would have, if realised, on the environment
<b>PES</b>	Project Environmental Specification describes project specific standards to be met during construction, usually set in the EA for the project.
<b>SES</b>	Standard Environmental Specification describes a set of minimal environmental standards for all construction sites.
<b>TCP Project Manager</b>	Means the overall project manager responsible for implementation of the project.
<b>TCP Environmental Manager</b>	Works together with the Project Manager and Construction Manager to ensure that the requirements of the CEMP/SES and Environmental Authorisation are met.
<b>TCP Construction Manager</b>	Works together with the Project Manager to ensure that Construction proceeds in accordance with the relevant specifications and deadlines.
<b>TCP Environmental Officer</b>	Responsible for ensuring that the CEMP is implemented by the construction team and Contractors and their Sub-contractors.

### 3 Overview of the Construction Environmental Management Plan (CEMP)

It is the stated goal of Transnet Capital Projects to implement sustainable environmental management practices within the organisation. This will apply to the planning, design, construction, operation, restoration, reuse and decommissioning activities related to all infrastructure development. The CEMP is the tool used to ensure this goal is achieved during the construction and commissioning phases. Some decommissioning may occur during site clearing in brownfield sites and this CEMP will also apply to those activities.

### 3.1 Composition of the CEMP

This Standard, Environmental Specifications and Environmental Authorisation (where applicable) shall form an integral part of all contracts with Contractors. The CEMP and associated documents or specifications as well as the EA shall be included in the Tender Documents issued to the prospective Contractors. The Contractors shall incorporate all requirements set out in the specifications in their submissions to Transnet Capital Projects.

There are two types of environmental specifications:

- **Standard Environmental Specification (SES)** that describes the minimal acceptable standard for environmental management for a range of environmental aspects commonly encountered on construction projects. This Specification sets environmental objectives and targets with which the Contractor shall comply.
- **Project Environmental Specification (PES)** that describes standards specific to a particular project. Variations and additions to the Standard Specification are set out in this Project Specification. These would generally be drawn from the EA or permits for that project or from specific requirements set by the Transnet Operating Divisions. The PES may also require a more stringent standard to that described in the SES if required by the EA or the particular environmental constraints at a construction site.

### 3.2 Purpose of the Environmental Specifications

The purpose of the PES is to incorporate the relevant recommendations of the Environmental Impact Assessment (EIA) and other environmental studies for the project and the relevant conditions of the EA and the Transnet Operating Division's Environmental Management requirements (where applicable) into an environmental performance specification for implementation during the construction phase of the project.

The specifications are configured as performance specifications to ensure that Transnet Capital Projects and any entities that enter into formal agreements with Transnet Capital Projects viz. Consultants, Contractors and Sub-contractors, achieve an acceptable level of environmental performance. No advice, approval of method statements or any other form of communication from Transnet Capital Projects shall be construed as an acceptance by Transnet Capital Projects of any obligation that indemnifies the Contractor from achieving any required level of performance. Further, there is no acceptance of liability by Transnet Capital Projects which may result from the Contractor failing to comply with the specifications, i.e. the Contractor remains responsible for achieving the required performance levels.

## 4 References

- Constitution of the Republic of South Africa 108 of 1996
- National Environmental Management Act 107 of 1998
- National Environmental Management – Air Quality Act 39 of 2004
- National Environmental Management – Waste Act 59 of 2008
- National Environmental Management – Biodiversity Act 10 of 2004

- National Environmental Management – Protected Areas Act 57 of 2003
- National Environmental Management – Integrated Coastal Management Act 24 of 2008
- National Veld and Forest Fire Act 101 of 1998
- Marine Living Resources Act 18 of 1998
- Marine Pollution (Control and Civil Liability) Act 2 of 1986
- Mineral and Petroleum Resources Development Act 28 of 2002
- National Heritage Resources Act 25 of 1999
- National Forests Act 84 of 1998
- National Water Act 36 of 1998
- Atmospheric Pollution Prevention Act 45 of 1965
- Environmental Authorisation (EA) applicable to the Project
- Sea-shore Act No. 21 of 1995
- Standards Act 29 of 1993
- Dumping at Sea Control Act 73 of 1980
- Occupational Health & Safety Act 85 of 1993
- Environment Conservation Act 73 of 1989
- ISO 9001:2008
- ISO 14001:2004
- OHSAS 18001:2007
- Road Traffic Act 29 of 1989
- Hazardous Substances Act 15 of 1973
- SANS 10103:2004. The measurement and rating of environmental noise with respect to land use, health annoyance and to speech communication
- Transnet Safety, Health, Environmental and Quality Risk Management System
- Transnet Capital Projects Standard Environmental Specification
- Project Environmental Authorisation applicable to the Project and/or any other environmental permits applicable to the project

## 5 Roles Responsibilities and Organizational Structure Relating to the Implementation of the CEMP

### 5.1 Environmental Management: Roles and Responsibilities

#### *5.1.1 Transnet Capital Projects Environmental Manager*

The Employer's Environmental Manager will be responsible for ensuring that the CEMP and associated documents or requirements are complied with on the construction site. The Employer's Environmental Manager will report functionally to Transnet Capital Projects GM: Legal, Risk, Quality & Sustainability and relevant Project Manager.

The specific tasks during the construction stage will include:

- Liaison with the authorities
- Preparation of the project specific PES
- Tender evaluation, development of environmental criteria and adjudication thereof
- Review all reports from the Environmental Specialist/Officer, including sign off on Method Statements
- Conduct any environmental incident enquiries
- Ensure induction material includes project appropriate environmental issues
- Approve training programmes and other awareness initiatives
- Coordinate or facilitate internal environmental audits.

- Prepare environmental monitoring protocols (if monitoring to be done by Environmental Specialist and not an outside consultant)

The Environmental Manager may delegate part or all of these responsibilities to the Transnet Capital Projects Environmental Specialist/Officer, based on the merits of the particular project at hand.

### ***5.1.2 Transnet Capital Projects Construction Manager***

The Transnet Capital Projects Construction Manager has overall responsibility for environmental management on site which includes the implementation of the CEMP, SES, PES, permits and licenses and reports to the Project Manager. The Employer's Construction Manager is supported by the TCP Environmental Manager. The specific tasks during the construction phase will include:

- Reviewing the monthly reports compiled by Environmental Officer.
- Identifying the need for remedial measures with regard to proposed works.
- Communicating directly with the Contractors.
- Issuing non-conformance notification to Contractors that do not comply with the requirements of the CEMP and associated requirements or documents, including EA, EMP, permits and licenses.

### ***5.1.3 Transnet Capital Projects Environmental Specialist***

The role of the TCP Environmental Specialist is essentially the same as that of an Environmental Control Officer (ECO) but with some additional responsibilities. In instances where the EA requires an independent ECO, an outside consultant will be contracted to undertake the environmental audits of the project. The TCP Environmental Specialist functionally reports to the TCP Environmental Manager, and provides mainly quality assurance with respect to the implementation of environmental governance framework during construction phase.

### ***5.1.4 Transnet Capital Projects Environmental Officer***

The TCP Environmental Officer (EO) reports functionally to the TCP Construction Manager and is responsible for conducting the day-to-day tasks required to ensure that the EA, EMP, CEMP and any permits and licenses are correctly implemented on the construction site.

The Employer's Environmental Officer will conduct the following tasks:

- Ensure that environmental issues receive adequate attention in the site induction training.
- Prepare and conduct awareness training (e.g. posters, tool box talks, signage)
- Conduct monthly observation & inspections and audit of all work places.
- Monitor the Contractor's compliance with the EA, EMP, CEMP and any permits and licences on site.
- Conduct monthly observations and environmental audits of all Contractor's and work areas.
- Ensure that all environmental monitoring programmes (sampling, measuring, recording etc when specified) are carried out according to protocols and schedules



- Measurement of completed work (e.g. areas top soiled, re-vegetated, stabilised etc)
- Maintain site documentation related to environmental management (permits, CEMP, method statements, EA, reports, audits, monitoring results, receipts for waste removal etc). Documentation to be maintained on the relevant site Document Control System.
- Attendance at scheduled SHE meetings and project coordination meetings
- Inspect and report on environmental incidents and check corrective action
- Keep a regular photographic record of all environmental incidents
- Implementation of environmental-related actions arising out of the minutes from scheduled meetings
- Management of complaints register
- Review and Sign off Method Statements prepared by Contractor's
- Audit Environmental Method Statements
- Collate information received, including monitoring results into a monthly report to the Construction Manager showing progress against targets.
- The compilation of the Project Environmental Management File

The key deliverables will include the compilation of:

- Project Start Up Checklist
- Monthly inspection/environmental audit report
- Monitoring results
- Site close-out reports
- Incident reports
- Environmental Incident Register
- Environmental Non-Conformance Register
- Complaints Register
- Method Statements Register
- Hazardous Substances Register
- Site Close Out Inspection

### ***5.1.5 Contractor's Environmental Officer***

The Contractor shall appoint an Environmental Officer whose role is to ensure compliance with the requirements of the CEMP. The Contractor shall submit the name and CV of the Environmental Officer as well as an Environmental Plan detailing roles and responsibilities. This will be for the Employer's Construction Managers' approval and no work can commence on site if this has not been done.

The Contractor's Environmental Plan will typically consist of:

- Environmental Plan describing environmental management responsibilities of the Contractor's Project Manager, Contractor's Site Manager and the Contractor's Environmental Officer.
- Organisational Environmental Policy
- Environmental Method Statements
- CEMP
- SES
- PES, where applicable.

The Contractor's Environmental Officer will liaise with the TCP Environmental Officer on site. It will be the responsibility of the Contractor's Environmental Officer to ensure that all work is conducted according to approved Environmental Method Statements and that the

requirements of the CEMP are implemented in a timeous and proper manner in his/her work area The Contractor's Environmental Officer tasks will include:

- Daily, weekly and monthly inspections of the work area(s) as per schedule. The Contractor is referred to **Annexure 3** for an example of the items that will need to be inspected and which items will be audited by the Employer's Environmental Officer
- Prepare activity based Environmental Method Statements
- Monitor compliance with the CEMP and Environmental Method Statements
- Ongoing Environmental Awareness Training of the Contractor's site personnel.
- Reporting and recording of any environmental incidents caused by the Contractor or due to the Contractor's activities
- Close out of environmental incidents
- Attendance at all SHE meetings, toolbox talks and induction programmes
- Waste Management
- Ensure that environmental signage and barriers are correctly placed
- Taking required corrective action within specified time frame

The Contractor's Environmental Officer will be expected to submit daily, weekly and monthly checklists to the Employer's Environmental Officer.

Should the Contractor's Environmental Officer change from that person identified during either tender stage, or construction period, the Contractor shall submit a CV of a replacement Environmental Officer for approval by the Employer's Environmental Officer and Construction Manager. No work can proceed until the replacement Environmental Officer has been approved.

#### **5.1.6 Environmental Auditor**

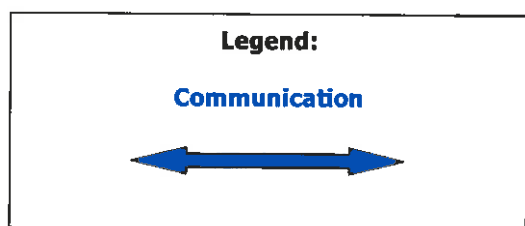
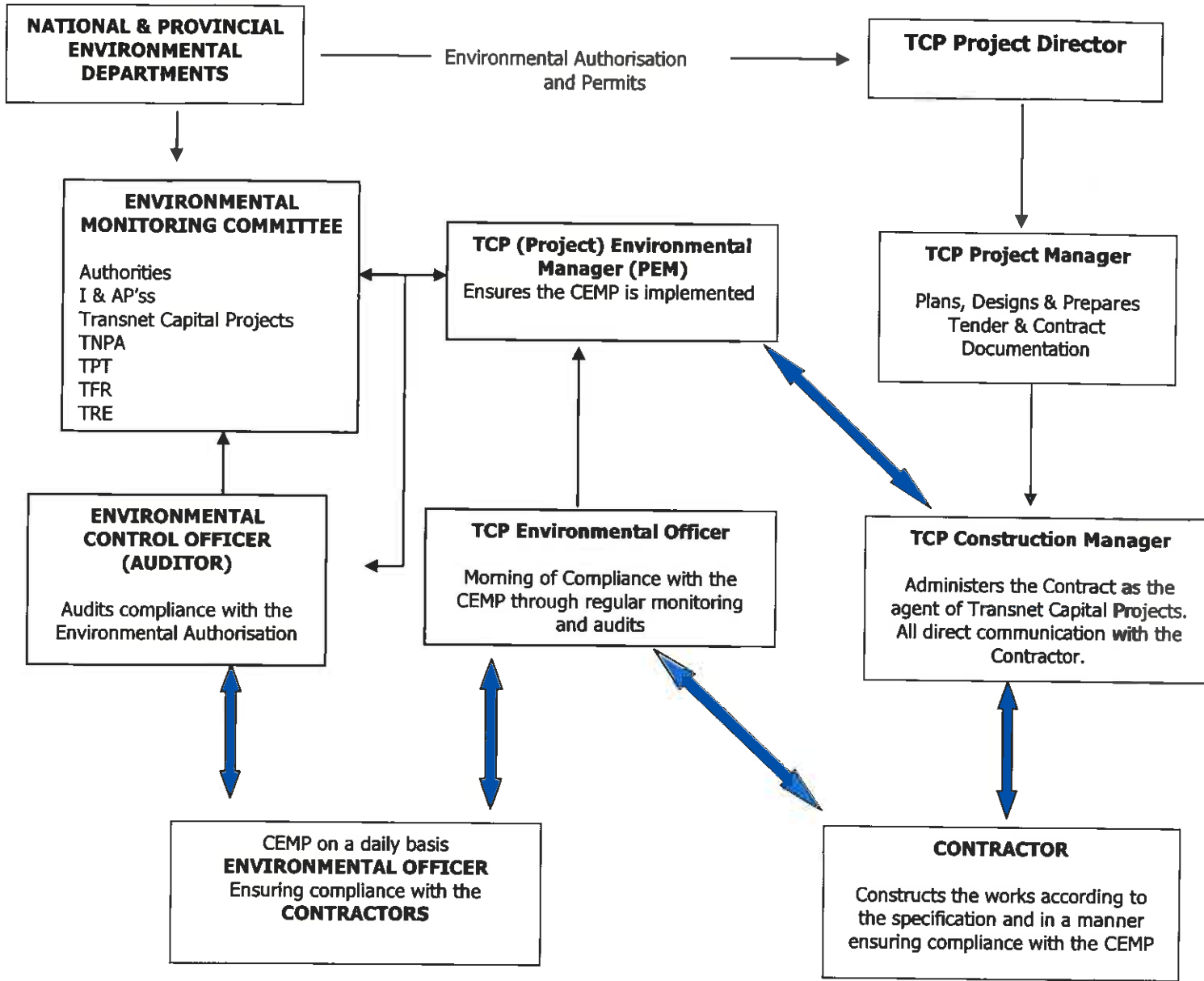
The Environmental Authorisation (EA) may require that an Independent Environmental Control Officer (ECO) is appointed to monitor compliance with the conditions of the EA and EMP. In these instances the ECO will be appointed. The ECO shall be an independent party to TCP. The ECO conducts environmental audits to assess compliance during construction with the relevant requirements of the EA, the CEMP and associated documents and other environmental permits. The Environmental Auditor shall be independent to the project being audited.

## **5.2 Organisational structure**

The organisational structure identifies and defines the responsibilities and authority of the various entities involved in the project. All instructions and official communications regarding environmental matters shall follow the organisational structure shown in **Figure 1**.

All instructions that relate to the CEMP will still be given to the Contractor via the TCP Project Manager. In an emergency situation, however, the TCP Environmental Officer may give an instruction directly to the Contractor. Environmental Management of the site will be an item on the agenda of the monthly site meetings, and the Employer's Environmental Officer will attend these meetings. If at any time the TCP Project Manager is uncertain in any way with respect to an environmentally related issue or any specification in the CEMP, he shall consult with the Employer's Environmental Manager.

**Figure 1: Typical Organogram for Construction**



## 5.3 The Contractor

The Contractor shall comply with the requirements of the CEMP and abide by the Employer's Construction Manager's instructions regarding the implementation of the CEMP.

The Declaration of Understanding, as detailed in Section 0, must be signed, and the original signed copy must be submitted to the Employer's Construction Manager prior to the start of construction.

**Annexure 1** details some of the main actions required for the by the Contractor at various stages during the contract. The Employer's Environmental Officer will monitor that all of these actions are undertaken in accordance with the CEMP. **Annexure 1** aims to ensure that the main actions are not overlooked, and unnecessary delays do not occur, by ensuring that the Project Manager and Contractor are aware of these requirements ahead of time.

It must be noted, however, that **Annexure 1** does not list all the requirements of the CEMP, but rather serves as a guide as to where definite actions are required before certain activities can commence. **Annexure 1** only summarises main points in the SES and should therefore be read in conjunction with the SES, and the PES.

**Annexure 3** contains additional issues deemed to form part of the CEMP. It also lists the aspects that will be subject to regular inspections and audits by the various parties.

## 6 Matters Pertaining to the Implementation of the CEMP

### 6.1 Availability of the CEMP

Copies of the relevant CEMP documentation (SES, & PES, and any Contractor's Guideline Documents) shall be available at the site offices of the Contractor and on Site. All personnel will be required to go through an environmental induction programme before commencing work on site and this shall be reinforced through weekly/bi-monthly toolbox talks. The Contractor shall ensure that all personnel that work on Site (including Sub-contractors and their staff, and suppliers) are familiar with and understand the requirements of the CEMP.

### 6.2 Project Environmental Management Plan

The Contractor is required to submit an Environmental Management Plan (EMP) with the Tender Documents. The EMP should describe the relevant roles and responsibilities and how potential environmental risks will be assessed and managed including the monitoring and recording thereof. These will be used to establish a Contractor's competency and experience of preventing and managing environmental impacts.

## 6.3 Environmental Method Statements

Method statements (see Annexure 1) need to be compiled by the Contractor throughout the Construction and Commissioning phase of the project. These Method Statements must be approved by the TCP Construction Manager and TCP Project Environmental Manager or Environmental Officer. The Contractor shall submit written method statements to the Construction Manager, as requested in the CEMP or as directed by the Construction Manager. The Environmental Method Statement is a written submission by the Contractor to the Employer's Construction Manager describing:

- The proposed activity, setting out the plant, materials, labour and method the Contractor proposes using to carry out an activity.
- The potential negative impacts and environmental risks associated with the activity.
- How the impact will be prevented or managed.
- The relevant environmental standards to be met.
- Environmental monitoring to be undertaken and records maintained.

The Method statement shall also cover applicable details with regards to:

- Construction procedures.
- Materials and equipment to be used.
- Transportation of the equipment to and from site.
- How the equipment/ material will be moved while on site.
- How and where material will be stored.
- The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur.
- Timing and location of activities.
- Description of how potential environmental impacts will be managed.
- Compliance/ non-compliance with the Standard Environmental Specification
- Any other information deemed necessary by the Employer's Construction Manager

The Contractor shall abide by these approved Environmental Method Statements, and any activity covered by an Environmental Method Statement shall not commence until it has been approved by the Employer's Construction Manager and Employer's Environmental Manager or Environmental Officer. To enable timely approvals, the environmental method statements shall be submitted to the Employer's Construction Manager and Environmental Officer for review three weeks prior to the intended date of commencement of the activity, or as directed by the Employer's Construction Manager. Certain method statements are required with the tender, as outlined in **Annexure 1**

**Annexure 2** gives an explanation of method statements and provides a typical pro forma method statement sheet to be completed by the Contractor for each activity requiring an Environmental Method Statement.

## 6.4 Environmental Incidents and Non-Conformances

An environmental incident can be divided into three levels, e.g. major, medium and minor. They are defined as follows:

### **6.4.1 Major Environmental Incident (Level 1)**

An incident or sequel of incidents, whether immediate or delayed, that results or has the potential to result in:

- A significant impact on the physical or biological environment (air, water and habitat) with extensive or long term impairment of ecosystem function or surface and groundwater resources;
- An inconvenience/disturbance/disruption/annoyance (including odour, dust, noise, traffic problems, loss of water supply) of a long duration or with a significant long term impact on interested and affected parties;
- A release of material (gas, liquid, solid) or energy that will cause chronic illness, permanent lost time injury, fatality or where extensive property damage is experienced by interested and affected parties;
- Irreparable damage to highly valued structures and sacred locations;
- Public or national/international media outcry; and/or
- Instances where water samples taken by or for the regulator to check legal compliance, were found to be outside the permitted limits and have resulted in prosecution

Where the environmental impact of a medium environmental incident is still present 120 days after occurrence, the incident will be reclassified as a major incident.

**NOTE:** A major environmental incident usually should be reported to the authorities, usually result in a significant pollution and may entail risk of public danger. Major environmental incidents usually remain an irreversible impact even with the involvement of long-term external intervention i.e. expertise, best available technology, remedial actions, excessive financial cost etc.

### **6.4.2 Medium Environmental incident (Level 2)**

An incident or sequel of incidents, whether immediate or delayed, that results or has the potential to result in:

- A moderate impact on the physical or biological environment (air, ground, water or habitat) with limited impairment of ecosystem function and/or surface and groundwater resources;
- An inconvenience/disturbance/disruption/annoyance (including odour, dust, noise, traffic problems, loss of water supply) of moderate or with medium effect on interested and affected parties;
- A release of material (gas, liquid, solid) or energy that causes severe but reversible illness, non-lost time injury or moderate property damage experienced by interested and affected parties;
- Damage to rare structures of cultural significance or significant infringement of cultural values/sacred locations;
- Attention from local media or widespread complaints; and or
- Instances where water samples taken by or for the regulator to check legal compliance, have been outside the permitted limits and an official caution/prohibition or improvement notice was issued

Where the environmental impact of a minor environmental incident is still present 3 days after occurrence, the minor incident will be reclassified as a medium incident.

**NOTE:** A medium environmental incident may be reported to the authorities, can result in significant pollution or may entail risk of public danger. The impact of medium environmental incidents should be reversible within a short to medium term with or without intervention.

### **6.4.3 Minor Environmental incident (Level 3)**

An incident or sequel of incidents, whether immediate or delayed, that results or has the potential to result in:

- A minor impact on the physical or biological environment (air, ground, water or habitat), with no significant or long-term impairment to the ecosystem function or surface -/groundwater resources;
- An inconvenience/disturbance/disruption/annoyance (including odour, dust, noise, traffic problems, loss of water supply) of short duration and with no long term effect on the employees and the community;
- A release of material (gas, liquid, solid) or energy that has the potential to cause illness, or that causes short term discomfort or reversible health effect to interested and affected parties;
- Isolated complaints by interested and affected parties;
- Instances where water samples taken by or for the regulator to check for legal compliance, have been outside the permitted limits and a letter had been issued by the regulator
- An incident where there is unnecessary wastage of a natural resource. Examples are leaking water pipes, escaping steam and wastage of electricity where it is obviously not the intention that the natural resource be wasted.

**NOTE:** A minor environmental incident is not reportable to authorities, should not result in pollution and may not have a risk of public danger. The impact of minor environmental incidents should be insignificant immediately after occurrence and/or once-off intervention on the day of occurrence.

### **6.4.4 Non-Conformances**

A non-conformance may be issued to the Contractor by the Employer's Construction Manager/Environmental Officer in the event of a major or medium environmental incident, if there are repeated minor incidents and if the documentation required to comply with the CEMP is not prepared satisfactorily.

## **6.5 Documentation and Records**

Copies of the following documents shall be kept by the Employers's Environmental Officer.

- Project Environmental Authorisation (if applicable)
- Project EMP approved by DEA (if applicable)
- CEMP, SES & PES
- Approved Environmental Method Statements

- Environmental monitoring data collected by the Contractor's Environmental Officer
- Environmental Incident Reports
- Environmental Awareness Training and attendance registers

The Contractor's Environmental Officer shall maintain copies of the following documents on site:

- Project Environmental Authorisation
- Project EMP authorised by relevant competent authority e.g. DEA
- Transnet and TCP SHEQ Policies
- CEMP, SES and PES
- Project Environmental Permits
- Declaration of Understanding
- Contractor's Environmental Policy
- Contractor's Organogram
- Contractor's Environmental Management Plan
- Approved Environmental Method Statements and Register
- Environmental Awareness Training and attendance registers
- Daily, weekly and monthly inspection checklists
- Hazardous Substances Register
- Non Conformance Reports and Registers
- Schedule for Construction Plant and Equipment
- Proof of waste disposal including hazardous waste
- Environmental monitoring records
- Environmental Incident Reports and Incident Register
- Records of Formal External Communications
- Site Closure Inspection Form
- Contractor's Environmental Management Handover File

All documents are to be retained for a period of 10 years. In the event of environmental documentation being lost, the Contractor will be penalised according to the specifications laid down in the relevant project-specific NEC contract.

## **6.6 Application for Exemption from complying with parts of the CEMP and/or SES**

It is intended that the CEMP and SES be applicable to projects or activities of any size or complexity. For small projects, or where the scope of work is limited, the Contractor may request, in writing to the Employer's Project Manager, for exemption from parts of the CEMP. The Employer's Project Manager shall consult the Employer's Environmental Manager in reaching a decision on whether exemption from some of the CEMP provisions may be granted.



## 6.7 Declaration of Understanding

I, \_\_\_\_\_

Representing \_\_\_\_\_

Declare that I have read and understood the contents of the Construction Environmental Management Plan and associated documents for:

Contract \_\_\_\_\_

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

Signed: \_\_\_\_\_

Place: \_\_\_\_\_

Date: \_\_\_\_\_

Witness 1: \_\_\_\_\_

Witness 2: \_\_\_\_\_

**SAMPLE**

# Annexure 1 - Main Actions Required by the Contractor to comply

## 1. Prior to Commencement

The Employer's Project Manager must ensure that the requirements below are requested of the Contractor in the Project Construction Contract Document, the Letter of Appointment and any other relevant correspondence with the Contractor prior to the start of works, as relevant.

### 1.1 The Declaration of Understanding

The Declaration of Understanding in the Contractor's Guideline Document shall be signed and provided by the Contractor as part of his Tender Document.

### 1.2 Environmental Statements

Where relevant, an Environmental Management Plan and Environmental Method Statements, to meet the requirements of the CEMP, SES and PES (activity based environmental method statements), shall be provided by the Contractor as part of their Tender. These include, but are not limited to, the following where applicable:

- Establishment of construction lay down area
- Hazardous and non-hazardous waste management
- Storm water management
- Contaminated water management
- Prevention of marine pollution
- Hydrocarbon spills
- Diesel tanks and refuelling procedures
- Dust control
- Spoil dumping
- Sourcing, excavating, transporting and dumping of fill material
- Noise and vibration control
- Removal of rare, endemic or endangered species
- Removal and stockpiling of topsoil
- Rodent and pest control
- Environmental awareness training
- Site division (demarcation of the site)
- Emergency procedures for environmental incidents
- Closure of construction laydown area

**Note:** The sanitation / toilet facilities are managed by the Health & Safety Department and are not covered in this CEMP.

### 1.3 Appointment of Contractor's Environmental Officer

The Contractor must appoint an Environmental Officer or assign to a competent person roles and responsibilities for environmental management during construction. The Contractor shall forward details of the appointment to the Employer's Construction Manager and Environmental Manager for their review and approval. Should the

Contractor's Environmental Officer or the person originally assigned with responsibilities for environmental management change from that person identified during either the tender stage, or the construction period, the Contractor shall submit the details of such appointment or assignment for the Employer's Project Manager's approval. No work can proceed until the replacement Environmental Officer or the assignment of a new person has been approved.

#### **1.4 Environmental Induction**

The Contractor shall ensure that all management, foremen and the general workforce, as well as all suppliers and visitors to site have attended the Induction Programme prior to commencing any work on site. If new personnel commence work on the site during construction, the Contractor shall ensure that these personnel undergo the Induction Programme and are made aware of the environmental specifications on site. The Contractor must ensure that all of their personnel understand the requirements of the EA, EMP, CEMP, SES and PES as relevant to their scope of work.

#### **1.5 Removal of rare, endemic or endangered species**

Where applicable, the Contractor must ensure that he appoints a suitably qualified specialist, to be approved by the Environmental Manager or Environmental Officer, to undertake the "Removal of rare, endemic or endangered species". This appointment must be completed at least three weeks before commencement of any other work on site.

### **2. During the Construction Period**

#### **2.1 Copy of the CEMP and familiarisation thereof**

A copy of the CEMP, SES and relevant PES shall be available on site, and the Contractor shall ensure that all the personnel on Site (including Sub-contractors and their staff) as well as suppliers, are familiar with and understand the specifications contained in the Standard Environmental Specification and PES.

#### **2.2 Environmental Method Statements (Activity Based)**

Other Activity Based Method Statements which are required during construction must be submitted to the Employer's Construction Manager and Environmental Manager for approval three weeks prior to the proposed commencement of the activity. Emergency construction activity Environmental Method Statements may also be required. The activities requiring Environmental Method Statements cannot commence if they have not been approved by the Construction Manager and Environmental Manager or Environmental Officer. The Contractor is provided with an Environmental Method Statement pro-forma which provides details of the minimum requirements to be included in the Contractor's Environmental Method Statement. Contractor's Environmental Method Statements that do not comply with those minimum requirements will not be approved. Activity Based Environmental Method Statements are defined in the Project Environmental Specification.

#### **2.3 Environmental Method Statement Awareness**

Where applicable, the Contractor's EO shall provide job-specific training on an *ad hoc* basis when workers are engaged in activities which require Environmental Method Statements. The Contractor's EO shall maintain a record of training topics and attendees.

## **2.4 Re-vegetation and rehabilitation**

The Contractor shall be responsible for rehabilitating and re-vegetating all areas to the satisfaction of the Employer's Construction Manager and Environmental Officer as detailed in the project specifications.

## **2.5 Other issues to ensure compliance**

The list below is a list of some of the other issues that the Contractor must ensure he has planned for to meet the requirements of the environmental specifications. It is not a comprehensive list but serves as a guide:

- Cement and concrete batching
- Workshop and maintenance of plant
- Protection of natural fauna and flora
- Protection of historical and archaeological artefacts

## **2.6 Site clean-up for Closure**

The Contractor shall clear and clean the Site and ensure that everything not forming part of the Permanent Works is removed from site and that all rehabilitation has taken place in accordance with the Project Environmental Specification. Retention moneys will not be paid until a Site Closure Inspection (conducted by the Employer's EO) has taken place and signed off by the Employer's Construction Manager and Environmental Manager together with the Contract Completion Certificate.

## **Annexure 2 - Information on Environmental Method Statements (Activity Based)**

Activity Based Environmental Method Statements are to be completed by the Contractor undertaking the work. The Environmental Method Statements will enable the potential negative environmental impacts associated with the proposed activity to be assessed.

The activity can only commence once the Environmental Method Statement is approved by the Employer's Environmental Officer and Construction Manager. In some instances local authorities may also need to approve the method statements. This will be highlighted in the Project Environmental Specification, when appropriate.

The Contractor (and, where relevant, any Sub-contractors) must also sign the Method Statement, thereby indicating that the works will be carried out according to the methodology contained in the approved Environmental Method Statement.

The Employer's Environmental Officer and Construction Manager, and where relevant ECO, will use the Environmental Method Statement to audit compliance by the Contractor with the requirements of the approved Environmental Method Statement.

Changes to the way the works are to be carried out must be reflected by amendments to the original approved Method Statement; amendments require the signature of the Employer's Environmental Officer and Construction Manager, denoting that the changed methodology or works are necessary for the successful completion of the works, and are environmentally acceptable. The Contractor will also be required to sign the amended Environmental Method Statement thereby committing him/herself to the amended Environmental Method Statement.

This Environmental Method Statement MUST contain sufficient information and detail to enable the Employer's Construction Manager and Environmental Officer to apply their minds to the potential impacts of the works on the environment. The Contractor will also need to thoroughly understand what is required of him/her in order to undertake the works.

The initial Environmental Method Statements that will be required are listed in the environmental specifications. Others may be requested by the Employer's Construction Manager during the Contract.

The time taken to provide a thorough, detailed environmental method statement is time well spent insufficient detail will result in delays to the works while the environmental method statement is rewritten to the employer's construction manager's and environmental officer's satisfaction.

The page overleaf provides a *pro forma* method statement sheet which needs to be completed for each activity requiring a method statement in terms of the CEMP.

# ENVIRONMENTAL METHOD STATEMENT

**CONTRACT:**..... **DATE:**.....

**PROPOSED ACTIVITY** (give title of method statement and reference number from the CEMP):

**WHAT WORK IS TO BE UNDERTAKEN** (give a brief description of the works):

**WHERE ARE THE WORKS TO BE UNDERTAKEN** (where possible, provide an annotated plan and a full description of the extent of the works):

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

Start Date:

End Date:

**DESCRIPTION OF HOW POTENTIAL ENVIRONMENTAL IMPACTS WILL BE PREVENTED OR MANAGED** (provide as much detail as possible, including annotated sketches and plans where possible):

\* Note: please attach extra pages if more space is required

**DECLARATIONS**

**1) EMPLOYER'S ENVIRONMENTAL OFFICER**

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

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

\_\_\_\_\_  
(Date)

**2) PERSON UNDERTAKING THE WORKS**

I understand the contents of this Environmental Method Statement and the scope of the works required of me. I further understand that this Environmental Method Statement may be amended on application to other signatories and that Employer's Environmental Manager and Construction Manager will audit my compliance with the contents of this Environmental Method Statement

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

\_\_\_\_\_  
(Date)

**3) APPROVING AUTHORITY (i.e. Employer's Construction Manager)**

The works described in this Method Statement are approved.

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

\_\_\_\_\_  
(Designation)

\_\_\_\_\_  
(Date)

# Annexure 3 - Environmental Inspections and Audits

## 3.1 Environmental Inspections and Audits

Environmental inspections and audits are conducted using five basic techniques:

- Interviews with Contractor’s staff including Sub-contractors and suppliers
- Document checks
- Observations
- Monitoring
- Measurement and verification

This document sets out the areas and aspects of the construction site that will be inspected or audited, the frequency of such audits, the auditor and auditee.

*It should be noted that these lists are not exhaustive and that each site will have specific issues that will need to be audited.*

For each construction project, the auditor and auditee are as follows:

<b>Place</b>	<b>Inspector/Auditor</b>	<b>Auditee</b>	<b>Inspection/audit frequency</b>
Work places	Contractor’s Environmental Officer	Contractor’s team	Daily Inspection
Construction site	TCP Environmental Officer	Contractor’s Environmental Officer	Monthly Audit
Construction site (entire area)	Environmental Manager or Independent Auditor	Environmental Officer	Quarterly Audit



### **3.2 Work Places Inspection**

The Employer's Environmental Officer will be required to conduct weekly inspections of all work places for which the Contractor is responsible, including but not limited to the following:

- Contractor's camp, recreational and canteen facilities
- Material lay down areas
- Liquid and solid waste storage facilities (general, hazardous, recycling and scrap)
- Workshops
- Oil traps
- Wash bays
- Construction work area
- Spray Booths
- Haul roads
- No-go areas
- Storm water drains
- Any other construction area for which the SHE Officer is responsible

At each of these sites, the Contractor's Environmental Officer will be required on a daily basis to check for the following, where relevant:

By observation:

- Litter
- Separation of solid waste as per system
- Hydrocarbon spills
- Effectiveness of dust control measures
- Illegal washing out of containers in drains
- Wash bay drainage systems are working
- Correct usage of drip trays
- Effectiveness of oil separators
- Water use and wastage
- Pollution of rivers and sea
- Provision and use of toilet facilities
- Any other illegal activities

By document check:

- Removal of oil for recycling as per schedule
- Removal of packaging as per agreements with suppliers
- Removal of hazardous waste by specialist Contractors as per schedule
- Correct placement of environmental signage and posters
- Document board listing emergency numbers, hazmat info sheets, etc.

### **3.3 Construction Site Audit**

The Employer's Environmental Officer will be required to conduct monthly inspections of the entire construction site, which may involve more than one Contractor and may include, but not be limited to the following:

- Entire site
- Fencing
- Environmentally sensitive areas
- Contractor's camp, recreational and canteen facilities
- Material lay down areas
- Scrap yard
- Workshops
- Oil traps
- Wash bays
- Sewage plant
- Quarries and borrow pits used for fill and construction material
- Spoil dumping areas
- Solid waste disposal areas
- Liquid waste disposal areas
- Bioremediation site
- Area for the temporary storage of hazardous waste
- Fuel depot and hydrocarbon storage areas
- Construction work area
- Concrete batching plant
- Spray booths
- Haul roads
- No-go areas
- Storm water drains
- And any other construction areas not listed

At each of these sites, the Employer's Environmental Officer will be required to check for the following, where relevant:

By observation:

- Litter
- Separation of solid waste as per system
- Hydrocarbon spills
- Use of bunding, hard standing and other protection measures
- Illegal dumping
- Effectiveness of dust control measures
- Illegal washing out of containers in drains
- Wash bay drainage systems are working
- Correct usage of drip trays
- Effectiveness of oil separators
- Illegal use of tracks and off-road driving in no-go areas
- Correct procedures are followed for topsoil removal and stockpiling
- Effectiveness of erosion protection measures
- Excess noise and vibration
- Water use and wastage
- Pollution of rivers and sea
- Provision and use of toilet facilities
- Any other illegal activities

By document check:

- All receipts for the collection of old oil, general recycled waste and hazardous waste

- Correct placement of environmental signage and posters
- Document board listing emergency numbers, hazmat info sheets, etc.
- Complete and accurate record of Contractor's Environmental File

By measurement:

- Amount of water used by each Contractor (where practical)
- Amount of topsoil removed and stockpiled
- Amount of land stabilisation completed
- Area re-vegetated
- Amount of waste recycled, sent to scrap yard or disposed in dump
- Amount of material treated in the bioremediation site

By monitoring:

- Effectiveness of dust control systems
- Effectiveness of pollution control systems
- Effectiveness of rehabilitation and re-vegetation programmes
- Effectiveness of erosion control methods
- Effectiveness of noise control barriers

A site-specific inspection checklist will be provided to the Employer's Environmental Officer prior to site establishment.

### **3.4 Construction Site and Documentation Compliance Audit**

The Employer's Environmental Manager and/or an independent environmental auditor will conduct quarterly audits of the entire construction site and documentation system, which may include, but not be limited to the following:

- Site entrance
- Entire works area
- No-go areas
- Environmentally sensitive areas
- All work areas
- Liquid and Solid waste storage facilities
- All workshops
- Refuelling depots
- Contractor's camp area and lay down place
- Any other place which needs to be audited

By observation:

- Litter
- Liquid and Solid waste storage facilities
- Hydrocarbon spills
- Use of bunding, hard standing and other protection measures
- Illegal dumping
- Effectiveness of dust control measures
- Illegal washing out of containers in drains
- Wash bay drainage systems are working
- Correct usage of drip trays

- Effectiveness of oil separators
- Illegal use of tracks and off-road driving in no-go areas
- Correct procedures are followed for topsoil removal and stockpiling
- Effectiveness of erosion protection measures
- Excess noise and vibration
- Water use and wastage
- Pollution of rivers and sea
- Provision and use of toilet facilities
- Any other illegal activities

By document check:

- Complaints register is available and up to date
- Method Statements are filed correctly and up to date
- All environmental permits are available
- Copy of the EA is available on site
- Copies of the CEMP, SES and PES are available on site
- Copies of all daily, weekly inspections and audits, monthly reports, minutes, incident reports and corrective action reports are filed correctly
- Copies of all close-out reports are available
- The monitoring programme is being adhered to and the monitoring results are no more than one month late
- Chains of custody for samples can be provided on request
- Sampling protocols are followed
- Emergency numbers and procedures are clearly displayed
- Photographic record
- Records of Environmental Awareness Training of Contractor's staff
- Any other documentation necessary to ensure effective environmental management of the site

By verification (if necessary):

- Spot samples to check water quality (e.g. storm water runoff)
- Map/plan measurements to check areas disturbed/re-vegetated
- Check dust collection buckets are working
- Check oil separators
- Any other aspect which gives cause for concern

By interview:

- Employer's Environmental Officer
- Contractor's Environmental Officer
- Contractor's staff at random

A specific site audit protocol will be formulated prior to the first audit and sent to the Employer's Environmental Manager two weeks in advance of the quarterly audit.

### **3.5 Environmental Performance Criteria**

The standard/minimum requirement for all environmental audits is 80%, anything less than this will be unacceptable. In circumstances where compliance is less than 80%, non-conformance reports will be issued to the Contractor.