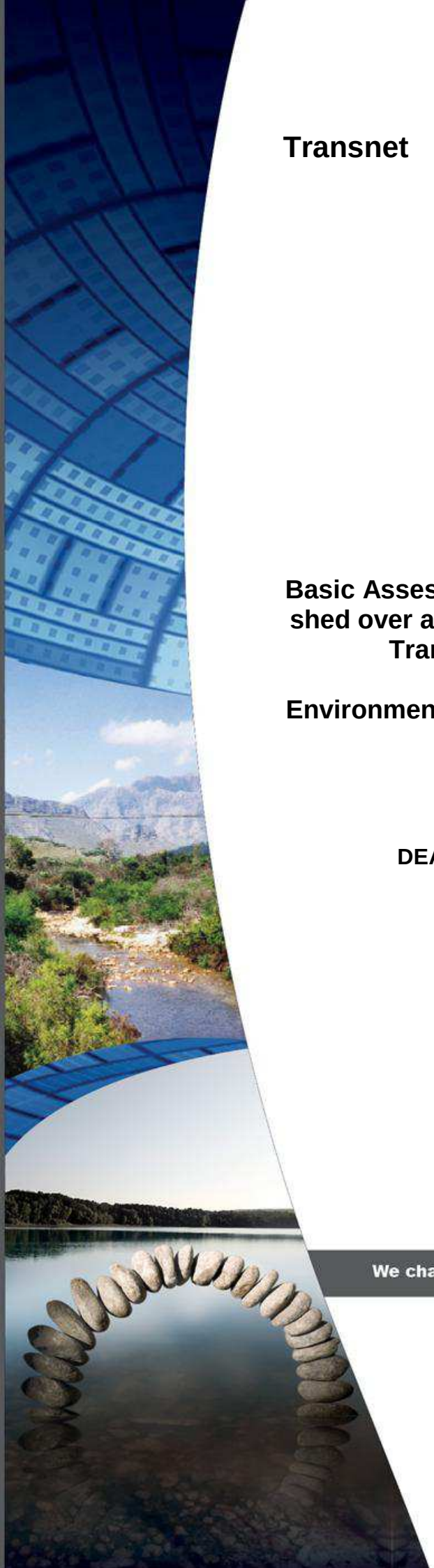

Transnet

Basic Assessment for the construction of a steel shed over an existing locomotive testing area at Transnet Engineering in Durban

Environmental Management Programme (EMP) – Draft2 for Authorisation

DEA Reference: 14/12/16/3/3/1/839

June 2013
J33001

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ENGINEERING & SCIENCE

PROPOSED CONSTRUCTION OF A STEEL SHED OVER AN EXISITNG LOCMOTIVE TESTING AREA AT TRANSNET ENGINEERING IN DURBAN

Draft Environmental Management Programme- Draft2 for Authorisation

CONTENTS

ANNEXURES

Annexure A: List of Important Contacts and Emergency Numbers
Annexure B: Inspection Sheet and Report Templates
Annexure C: List of Incidents and Associated Penalty Values
Annexure D: List of Construction Activities that Required Method Statements

ACRONYMNS

BA	Basic Assessment
C	Contractor
DEA	Department of Environmental Affairs
DWA	Department of Water Affairs
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Assessment Report
EMP	Environmental Management Plan
MS	Method Statement
PE	Project Engineer
PM	Project Manager
SC	Sub-contractor

1 INTRODUCTION

Transnet Engineering (TE) the project proponent proposes to construct a steel shed over their existing locomotive testing area located at 311 Solomon Mahlangu drive, in Durban.

Transnet Capital Projects appointed GIBB (Pty) Ltd (GIBB) as the Environmental Assessment Practitioner (EAP) to undertake the legally required Basic Assessment (BA) of the proposed Locomotive steel shed.

GIBB developed this draft Environmental Management Programme (EMP) as part of the BA process. The draft EMP follows on from the Basic Assessment Report (BAR) in as much as all the measures for mitigation of impacts that were identified during the BA process are incorporated. The EMP covers the pre-construction planning and design, construction, operational and decommissioning phases of the Project.

The draft EMP is published in conjunction with the draft BAR for public comment. Once public comment has been considered, the draft BAR and draft EMP will be amended if and as required. It will then be submitted as part of the BA application process to the Department of Environmental Affairs (DEA). On DEA's approval of the BAR and draft EMP, Environmental Authorisation may be granted which details the environmental conditions to be adhered to during the various developmental phases of the locomotive testing area shed. It is important to note that the EMP must be amended to incorporate any additional specifications required in terms of the Environmental Authorisation and any additional requirements the proponent may find necessary.

The final EMP must be considered during pre-construction planning and design; incorporated in all the contractor documents; and fully implemented prior to commencement of any construction activities. The EMP may also require further amendments as the project unfolds. Any significant amendments require DEA approval before being implemented.

1.1 Structure of Environmental Management Programme and Alignment to NEMA (2010), Section 33

This EMP is structured as follows:

Chapter 1 Provides the introduction and details of the proponent, EAP that undertook the BA and the authorities that dealt with the application for Environmental Authorisation

Chapter 2 Provides the objectives and scope of the EMP

Chapter 3 Presents the Glossary of Terms

Chapter 4 Provides a brief project overview, including the project motivation and description, the study area and environmental impact assessment

Chapter 5 Provides the legislative and policy context of the project

Chapter 6 Provides details on the roles and responsibilities; compliance monitoring and reporting; and penalties with regard to planning and implementation of the EMP

Chapter 7 Provides details on requirements, procedures and content of specific method statements and standard operating procedures to be developed for the project.

Chapter 8 Defines the environmental specifications to be adhered to during the pre-construction, construction, operational and decommissioning phases of the project

Chapter 9 Concludes the EMP.

Regulations 22 (l) requires that the draft EMP comply with Regulations 33, as detailed in **Table 1-1**.

Table 1-1: Alignment to NEMA 2010 EIA Regulation 33

Sub Section Content	Reference in the EMP
(a) details of – i. the person who prepared the environmental management programme; and ii. the expertise of that person to prepare an environmental management programme;	**Section 1.4.2**
b) information on any proposed management or mitigation measures that will be taken to address the environmental impacts that have been identified in a report contemplated by these Regulations, including environmental impacts or objectives in respect of— i. planning and design; ii. pre-construction and construction activities; iii. operation or undertaking of the activity; iv. rehabilitation of the environment; and v. closure, where relevant.	**Section 8** – Library of Environmental Specifications to Address the Specific Aspects and Impacts.
c) a detailed description of the aspects of the activity that are covered by the draft environmental management programme;	**Section 4** – Brief Project Overview.
d) an identification of the persons who will be responsible for the implementation of the measures contemplated in paragraph (b);	**Section 6** – Organi-sation, Roles and Responsibilities.
e) proposed mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon;	**Section 6.5** – Independent Environmental Control Officer; **Section 6.7** – Compliance Monitoring and Reporting; **Section 8** – Various monitoring related mitigation measures

	incorporated
f) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development, including, where appropriate, concurrent or progressive rehabilitation measures;	**Section 8.4.4** – Site Remediation, Rehabilitation and Re-vegetation
g) a description of the manner in which it intends to— i. modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; ii. remedy the cause of pollution or degradation and migration of pollutants; iii. comply with any prescribed environmental management standards or practices; iv. comply with any applicable provisions of the Act regarding closure, where applicable; v. comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;	**Section 8** – Library of Environmental Specifications to Address the Specific Aspects and Impacts
h) time periods within which the measures contemplated in the environmental management programme must be implemented;	Applicable time periods are indicated in **Section 8** in **[brackets]**
i) the process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of undertaking a listed activity;	*Inter alia*: **Section 8.1**; **Section 8.4.7**; **Section 8.4.8**; **Section 8.4.9**; **Section 8.4.10**
j) an environmental awareness plan describing the manner in which— i. the applicant intends to inform his or her employees of any environmental risk which may result from their work; and ii. risks must be dealt with in order to avoid pollution or the degradation of the environment;	**Section 8.4.1**
k) where appropriate, closure plans, including closure objectives.	**Section 8.4.4** – Site Remediation, Rehabilitation and Re-vegetation ***Note**: Due to the close proximity of the site to the Port of Durban, it is unlikely that the site would be returned to a green-field site. It would likely be redeveloped for industrial use in the foreseeable future.*

The legislation hereby ensures that effective environmental management is implemented throughout the life cycle of the project via the translation of EIA management actions into the FEMP and ultimately into an EMP.

1.2 Alignment with Conditions of Authorisation

To be completed once Environmental Authorisation is issued

1.3 Revisions

Revisions and updates to the EMP must be recorded. **Table 1-2** provides a list of revisions to the EMP to date and must be updated accordingly. All EMP revisions with substantial changes must be submitted to DEA for approval prior to implementation. Note that Annexures may require more frequent updating and it is therefore assumed that these revisions do not need to be sent to DEA for approval.

Table 1-2: EMP Revision Record

Document name and version	Date	Author / reviser	Contact
Draft EMP for Client Review (Original)	March 2013	Katherine de Jong	kdejong@gibb.co.za
Draft EMP for Public Review (Original)	May 2013	Katherine de Jong	kdejong@gibb.co.za
Draft 2 for Authorisation	June 2013	Katherine de Jong	kdejong@gibb.co.za

1.4 Details of the Planning Team

This section provides details on the planning team that was involved in the development of the draft EMP. The team includes the proponent organisation and EAP. Details of the contact person are also provided.

1.4.1 The Proponent: Transnet Engineering

Transnet engineering, an operating division of Transnet SOC Ltd, is the backbone of South Africa's railway industry with eight product-focused businesses, 150 depots, seven factories and 15, 000 employees countrywide. The organization is dedicated to in-service maintenance, repair, upgrade, conversion and manufacture of freight wagons, mainline and suburban coaches, diesel and electric locomotives as well as wheels, rotating machines, rolling stock equipment, castings auxiliary equipment and services.

With origins dating back more than a century to the mechanical engineering department of the former South African Railways and Harbours, this engineering organization has actively supported railways on the in the expansion of the country's economy and over the decades has developed some of the most innovative bogies and wagons ever built for 1067mm track. Through the years, Transnet engineering has become the key supplier of customised rolling stock for the coal, iron-ore, intermodal, agricultural, fuel and cement industries (http://www.transnet.net/Divisions/RailEngg.aspx).

Details of the Transnet contact person are provided below.

Name of Applicant:	Transnet Engineering
Contact Person:	Mr Bongani Xulu (Plant Engineer)
Address:	311 Solomon Mahlangu Drive Durban 4000
Postal Address:	PO Box 951 Durban 4000
Tel:	031 361 5884 / 083 277 2498
Fax:	031 361 4491
E-mail:	Bongani.Xulu @transnet.net

1.4.2 The Environmental Assessment Practitioner: GIBB (Pty) Ltd

GIBB is a multi-disciplinary engineering and environmental consultancy organisation. GIBB's Environmental Division has a proven track record in the planning, co-ordination, management and execution of a wide range of environmental projects, including BAs, EIAs and EMPs.

Details of EAP's that prepared the draft EMP are as follows:

Name	Ms Katherine de Jong
Address:	54 Norfolk Terrace 2nd Floor, IBM Building Westville 3630
Postal Address:	PO BOX 1365 Westville 3630
Tel:	+27 31 267 8560
Fax:	+27 31 266 3310
E-mail:	kdejong@gibb.co.za
Expertise	BSc (Hons) (Geography and Environment Management) - An environmental scientist specialising in environmental processes such as Environmental Auditing, Environmental Basic Assessments, Integrated Waste Management Plans and Integrated Water Use Licences.

1.4.3 The Environmental Authority: Department of Environmental Affairs

Since Transnet is a parastatal, the DEA is the designated authority responsible for authorising the BA and this EMP. DEA has overall responsibility for ensuring that the applicant (Transnet Engineering) complies with the conditions of its Environmental Authorisation as well as this EMP.

The following DEA case officers were involved in handling the BA application and EMP review:

Name:	Lerato Mokoena
Title:	Environmental Officer: Environmental Impact Evaluation
Postal Address:	Department: Environment Affairs Private Bag X 447 Pretoria 0001
Tel:	+27 12 310 3137
Fax:	+27 12 320 7539
E-mail:	LMokoena@environment.gov.za

1.4.4 Assumptions and Limitations

Assumptions and limitations are listed below:

- The development of the EMP follows from those captured in the Basic Assessment Report and assumes that GIBB has been provided with all relevant project information known to Transnet Engineering at the time it was provided and that it was correct at such time; and
- There will be no significant changes to the Proposed Project between the submission of this EMP
- Implementation of the Proposed Project that could substantially influence the conclusions and recommendations are given in this report.

2 OBJECTIVES AND SCOPE

2.1 Objective of the Environmental Management Programme

In accordance with the National Environmental Management Act 107 of 1998 and associated EIA Regulations, an Environmental Management Programme (EMP) must be compiled and approved by the Department of Environmental Affairs (DEA), prior to the commencement of construction activities for the proposed project. The legislation states that an EMP is to be implemented by the appointed proponent, contractor and operator of the project which will ensure that environmental impacts associated with the proposed project are mitigated as required.

It is imperative that the remedial and mitigation requirements identified during the Basic Assessment process are effectively realised during pre-construction site investigations, construction, operation, through to the final decommissioning of the project. Accordingly, the EMP plays a key role in the implementation of consistent and continued environmental management for the duration of the project life cycle.
Figure 2-1 contextualises EMPs within the broader environmental assessment and management processes for the project. It also illustrates the links between the various activity life cycles, processes and mechanisms specific to the development of the steel shed over the existing locomotive testing area.

Therefore the EMP provides environmental management guidelines, in design, construction, operational and decommissioning activities, with which the respective parties of the project must comply.

The Environmental Control Officer (ECO), acting on behalf of both Transnet Engineering and environmental authorities, will monitor the implementation of the EMP during construction. The EMP will form part of the contractual agreement between Transnet Engineering and the appointed construction contractor. Compliance with the EMP must therefore form part of all the construction contactor's working tender documentation and be endorsed contractually. The recommendations and constraints, as set out in this document are thus enforceable under the General Conditions of Contract. (A similar approach is envisaged for eventual demolition of the facility).

As previously stated, this EMP is currently in draft form and will be finalised once DEA issues the environmental authorisation. The conditions of approval that are recorded in the environmental authorisation will then be taken into account in finalising the EMP. As such, the EMP structure captures the requirements of the Environmental Authorisation through incorporating environmental specifications applicable to the project, against which the effectiveness of management of each impact will be measured.

The objectives of an EMP should include to (Hill, 2000):

- Ensure compliance with regulatory authority stipulations and guidelines which may be local, provincial, national and/or international from the start of the project
- Ensure that there is sufficient allocation of resources on the project budget so that the scale of EMP-related activities is consistent with the significance of project impacts
- Verify environmental performance through information on impacts as they occur
- Respond to changes in project implementation not considered in the BA
- Respond to unforeseen events
- Provide feedback for continual improvement in environmental performance.

2.2 Scope of the Environmental Management Programme

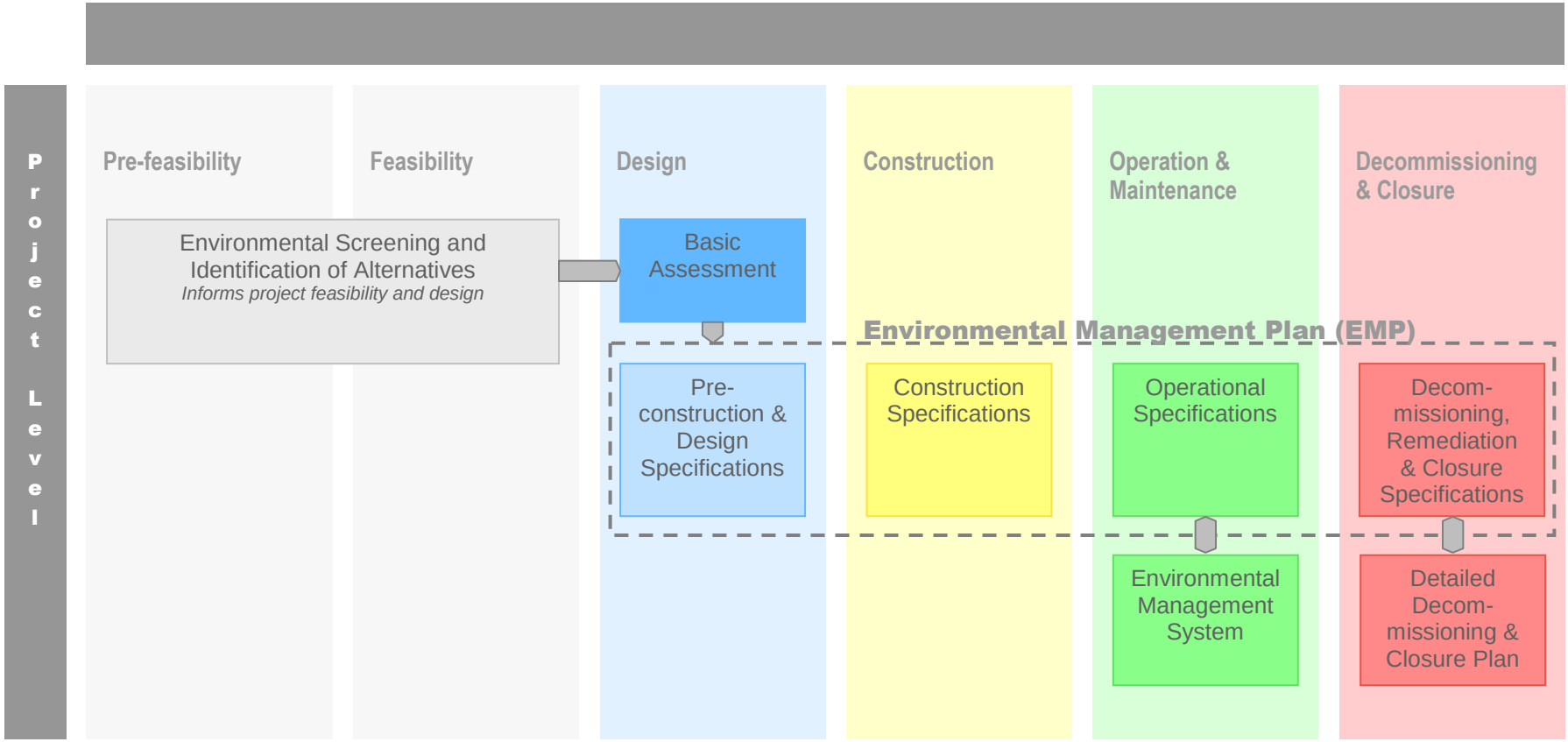
In order to achieve the above objectives, the generic scope of an EMP should include the following (Hill, 2000):

- Definition of the environmental management objectives to be realised during the life of a project (i.e. pre-construction, construction, operation and/or decommissioning phases) in order to enhance benefits and minimise adverse environmental impacts.
- Description of the detailed actions needed to achieve these objectives, including how they will be achieved, by whom, by when, with what resources, with what monitoring/verification, and to what target or performance level. Mechanisms must also be provided to address changes in the project implementation, emergencies or unexpected events, and the associated approval processes.
- Clarification of institutional structures, roles, communication and reporting processes required as part of the implementation of the EMP.
- Description of the link between the EMP and associated legislated requirements.
- Description of requirements for record keeping, reporting, review, auditing and updating of the EMP.

Specifically, this EMP aims to:

- Draw attention to all the key environmental management requirements applicable to the project
- Organise environmental management requirements for the various life-cycle phases, as were determined through the Basic Assessment process, in a meaningful and structured way
- Provide an environmental management planning document for incorporation into construction tender and contract documents, commissioning procedures, operational EMS, and decommissioning and final site remediation procedures
- Provide information to be included as part of the vendor tender pack, with the understanding that the selected vendor(s) will provide for compliance to the EMP in his/her/their tender submission(s)
- Define and outline the functions, roles and responsibility of accountable persons for effective environmental management
- State key standards and guidelines, which are required to be achieved in terms of environmental legislation
- Outline mitigation measures and environmental specifications which are required to be implemented during pre-construction, construction, operation, decommissioning and closure phases of the project, in order to minimise the extent of environmental impacts and to manage environmental impacts associated with the project through effective control
- Identifies the requirements for detailed Method Statements (construction phase) and Safe Operating Procedures (operational and decommissioning phases) for certain aspects or activities
- Prevent long-term or permanent environmental degradation
- Define requirements and procedures for monitoring
- Outline procedures for environmental management and control, in the event of pollution or similar incidents.

Figure 2-1: Environmental Management Plan context in environmental planning and management processes



Source: Adapted from Lochner, 2005

3 DEFINITIONS OF TERMS

Table 3-1: Glossary of Terms

Audit	A verification process that is used to obtain information regarding the implementation of the EMP. It is an objective tool used to make improvements at the workplace
Avi-fauna	All birdlife and their nests.
Berm	A barrier that is designed to divert surface water flow. Berms will primarily be used along roads/tracks to prevent to concentrated flow of water over particular areas, thereby reducing erosion of roads.
Bunding	An impervious containment system for potential spillages from tanks / containers stored on site. The bunded area shall have a capacity greater than 110% of the total tankage contained. The bunding shall be constructed of a material impermeable and resistant to the stored material.
Client	For the proposed project, Transnet Engineering is the client.
Construction activities	Any action undertaken by the contractor, suppliers, sub-contractors or employees during the construction process.
Contractor	Construction companies as well as their sub-consultants and suppliers appointed to undertake the construction activities on behalf of the client.
Construction camp	The area allocated for the establishment of equipment, repair area, ablution facilities, lay down and rest areas, etc. It also serves as the central point for the storage of fuel and construction material.
Environment	The surroundings within which humans exist and include biophysical, social and economic aspects. Examples include water, air, soil, plants and animals.
Environmental Control Officer (ECO)	Individual appointed by the Project Manager who is responsible for the monitoring, review and verification of the implementation of the EMP, liaison between Transnet Engineering, Contractor, landowners and monitoring, reviewing and verifying compliance with the EMP by the Contractor.
Environmental Officer (EO)	Individual appointed by the Contractor to assist with the effective implementation of the EMP and to render environmental control of site actions, re-mediation and rehabilitation work on a day-to-day. The EO focuses exclusively on matters related to environmental management, compliance and enhancement.
Environmental specification	A component of the contractor's construction activity that is likely to interact with and potentially impact on the environment.
Environmental impact	A positive or negative change to the environment that results from the effect of a construction activity. The impact may be a direct or indirect consequence of a construction activity.

Environmental Management Programme (EMP)	An EMP is to be implemented by the appointed contactor, to ensure that environmental impacts that may occur due to construction activities are mitigated on site. An EMP provides environmental management specifications, which must be complied with by the Contractor in constructing the Rock Phosphate Storage Facility. The undertaking of an EMP is in accordance with the requirements of the National Environmental Management Act (NEMA) Environmental Impact Assessment (EIA) Regulations.
Fauna	All animals identified within or outside of the construction area. Animals may not be harmed in any way.
Flora	All plant and tree species identified within or outside of the construction area.
General solid waste	Domestic, commercial, non-hazardous waste and builders rubble e.g. paper, plastics, food, tins, etc.
Hazardous substance	Any substance that is of risk to health and safety, property or the environment. Hazardous substances have been classified under the SANS 10228: 'The Identification and Classification of Dangerous Goods and Substances'.
Hazardous waste	Any inorganic or organic element or compound that because of its toxicological, physical, chemical or persisting properties, may exercise detrimental acute or chronic impacts on human health or development. Hazardous wastes are classified in accordance with the 'Minimum Requirement for the Handling, Classification and Disposal of Hazardous Waste' published by the Department of Water Affairs and Forestry (DWAF) (1998).
Hazardous waste landfill site	A waste disposal site that is designed and managed to accommodate the disposal of hazardous waste substances, and is accordingly permitted/licensed
Heritage site	A site that contains either archaeological artefacts, graves, buildings older than 60 years, meteorological or geological fossils etc.
Land owner	The individual or company that owns the land adjacent to the construction site.
Method Statement (MS)	Method Statements indicate how compliance with the Environmental Specification will be achieved. The Contractor shall submit a written Method Statement to the ECO for approval, covering those activities, which are identified (in this document and/or by the ECO), as being potentially harmful to the environment.
Material Safety Data Sheets (MSDS)	MSDS are intended to provide workers and emergency personnel with procedures for handling or working with specific substances in a safe manner, and includes information such as physical data (melting point, boiling point, flash point, etc.), toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment, and spill-handling procedures. In South Africa the Occupational Health and Safety Act 85 of 1993 (as amended) specifies the requirements for MSDSs.

Servitude	A servitude is a right to access which allows a local authority access to a property for inspection or installation of roads, pipes, sewerage lines, electricity cables and so on. It is registered against the title deed.
Site Diary	A logbook kept on site during construction to record the day to day construction activities.
Spoil	Uncontaminated soil removed during excavations, culverts and roads.
Topsoil	The layer of soil covering the ground that allows for the successful germination of seeds, water penetration and is a source of micro-organisms and plant nutrients.
Watercourse	A natural channel in which water flows regularly or intermittently.
Wetland	Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil. (National Water Act 36 of 1998)
Workforce	All people involved in the construction activities, including people employed by the client or contractor, either permanent or casual staff.

4 BRIEF PROJECT OVERVIEW

4.1 Project Motivation

In summary the motivation for the proposed Locmotive Testing Shed Project is to:

- Provide employees working in this area as well as the equipment they use with shelter from the elements such as rain, sun, dust and wind
- Increase productivity and improve employees health and safety

4.2 Project Description

Transnet Engineering (TE) intends to construct a steel shed over the rail tracks of an existing locomotive testing area at the TE premises in Bayhead in the Port of Durban, KwaZulu-Natal.

The existing Locomotive Testing Area is situated within the TE premises at 311 Solomon Mahlangu Drive, approximately 10km southwest from the Durban City Centre. The TE premises link in with the local Transnet rail network. The premises is fenced with a 24-hour 7-day-per-week security access control.

The TE Premises occupies approximately 3.4300 hectares of land and is bordered by the Solomon Mahlangu Drive (Edwin Swales VC Drive) to the south west. The Locomotive Testing Area (where the proposed shed is to be constructed) lies in the south western corner of the TE premises next to other sheds used for rail maintenance operations. The shed will have a footprint of approximately 324m², and it will also be ±18m from the Umhlatuzana canal which runs parallel to the border fence, northwest of the property.

The TE premises are used for wreckage salvage, maintenance, repairs and upgrading of coaches, wagons, locomotives and connected elements of the rail components of Transnet. The existing 25 kilovolt Locomotive Testing Area (located on the TE premises) has been in use for many years and is utilised to perform brake tests and the commissioning of locomotives for Transnet. The site is provided with hard standing as it is tarred. Therefore although the rail tracks currently exist they are open to the elements as they are not enclosed. Locomotive testing and maintenance tasks are thus being performed in the open.

4.3 Project Activities

The following project activities were identified during the planning process and were as such considered during the BA and EMP development. It should be noted that the list of activities may need to be expanded or amended as the project unfolds. The EMP may then also need to be updated to address any additional environmental impacts and associated mitigation measures related to any revised or additional activities.

4.3.1 Construction Phase

The following facilities may be required and established in the site camp:

- Equipment yard and lay down area
- Waste material skips, stockpile and storage
- Site offices and ablution facility
- Concrete mixing / batching facility (provisional)
- Diesel, hydrocarbon and other substances storage/dispensing facility.

The possible construction activities that could potentially have an impact on the environment have been identified as the following:

- Use of available roads for transportation of equipment (some of which would be very large and bulky) and materials and for construction site access
- Use of transportation and construction vehicles, plant and equipment
- Setting up of a construction camp site at and/or close to the proposed site
- Noisy construction activities, such as heavy vehicles, jack hammers, hoists, cranes etc.
- Refuelling and maintenance of construction vehicles and plants
- Earth work for platform preparation
- Concrete batching and/or mixing
- Resourcing, introduction, storage and use of construction material such as water, concrete, brick, fuel, oils, steel structures, equipment, construction wastes and litter
- Use of hazardous substances such as fuels, oils, paints, solvents, etc.
- Possible use of portaloos
- Disposal of construction waste and rubble
- Erection of buildings and plant
- Interconnection of the new equipment to existing facilities.

4.3.2 Operation and Maintenance Phase

Once construction has been completed activities for the proposed development will be restricted to the following:

- Wreckage salvage, maintenance, repairs and upgrading of coaches, wagons, locomotives and connected elements of the rail component of Transnet
- Storage and use of hazardous substances such as lubricating oils, paints, solvents, etc.

4.4 Environmental Impact Assessment (Basic Assessment Process)

GIBB undertook the Basic Assessment (BA) and associated Public Participation Process for the proposed Locomotive testing shed.

4.4.1 Brief Process Summary

The proposed construction of the steel shed over the existing locomotive testing area had required that an Environmental Authorisation application be made through undertaking a BA. The BA process followed was in accordance with the National Environmental Management Act 107 of 1998 (NEMA) (as amended) and the revised NEMA Environmental Impact Assessment (EIA) Regulations published as Government Notice No. Regulation 543, 544, 545 and 546 of 2010. These regulations regulate and control activities which may have a detrimental effect on the environment. Accordingly, certain ”listed activities” require environmental authorisation by way of an BA or full EIA process.

The proposed development constitutes the following listed activities in terms of the EIA Regulations GN R 544 (Listing Notice 1):

Activity	**Description**
GN R544 Activity 11	“The construction of: (i) canals; (ii) channels; (iii) bridges; (iv) dams; (v) weirs; (vi) bulk storm water outlet structures; (vii) marinas; (viii) jetties exceeding 50 square metres in size; (ix) slipways exceeding 50 square metres in size; (x) buildings exceeding 50 square metres in size; or (xi) infrastructure or structures covering 50 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur

behind the development setback line."

(Note: The EIA Regulations defines a wetland as a watercourse)

4.4.2 Identified Impacts

The following potential categories of environmental impacts were identified through the BA:

- Pollution of the Water Environment (Umhlatuzana Canal)
- Soil and Groundwater Contamination Soil and Water Resource Contamination
- Hydrology, Drainage and Wetlands
- Fauna and Flora
- Public Health and Safety Air Quality
- Public Service Use and Infrastructure
- Traffic Impact and Use of and Impact on Public Roads
- Visual Impacts, Aesthetics and Sense of Place
- Air Quality
- Noise Impact
- Heritage Impacts

The recommendations for mitigation of the above impacts that were made in the BA, which are considered pertinent to the EMP, have been incorporated into the relevant sections of the EMP.

Refer to the draft BAR for further information on the identified impacts.

5 LEGISLATIVE AND POLICY CONTEXT

5.1 National, Regional and Local Legislation

All legislation applicable to the development must be strictly enforced both during the construction and operational phases, irrespective of whether they are covered in the Environmental Specification Section (**Section 8)** or not. The proponent, contractor, subcontractor and operator of the proposed shed must be acquainted with the relevant environmental legislation, including provincial and local government regulations, which are in place to ensure the protection of the environment. The environmental legislation applicable to the project includes, but is not limited to, the following:

- Constitution of the Republic of South Africa, 1996
- National Environmental Management Act 107 of 1998 (NEMA)
- Environment Conservation Act 73 of 1989
- National Water Act 36 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 Heritage Resources Act 25 of 1999
- KwaZulu-Natal Heritage Act 10 of 1997
- Occupational Health and Safety Act 85 of 1993
- Hazardous Substances Act 15 of 1973
- National Road Traffic Act 93 of 1996
- The White paper on integrated pollution and waste management of South Africa
- All relevant Provincial regulations and Municipal bylaws.

6 ORGANISATION, ROLES AND RESPONSIBILITIES

6.1 Organisational Requirements

In order to ensure sound development and effective implementation of the EMP, it is necessary to identify and define the responsibilities and authority of the various persons and organisations that will be involved in the project.

During construction, all instructions and official communications regarding environmental matters shall follow the generic organogram shown in Error! Reference source not found.. The organisational structure identifies and defines the authority structure, and the communication structure for the various parties involved in the construction of the proposed Transnet Locomotive Testing Shed. The structure may require revision as the project unfolds.

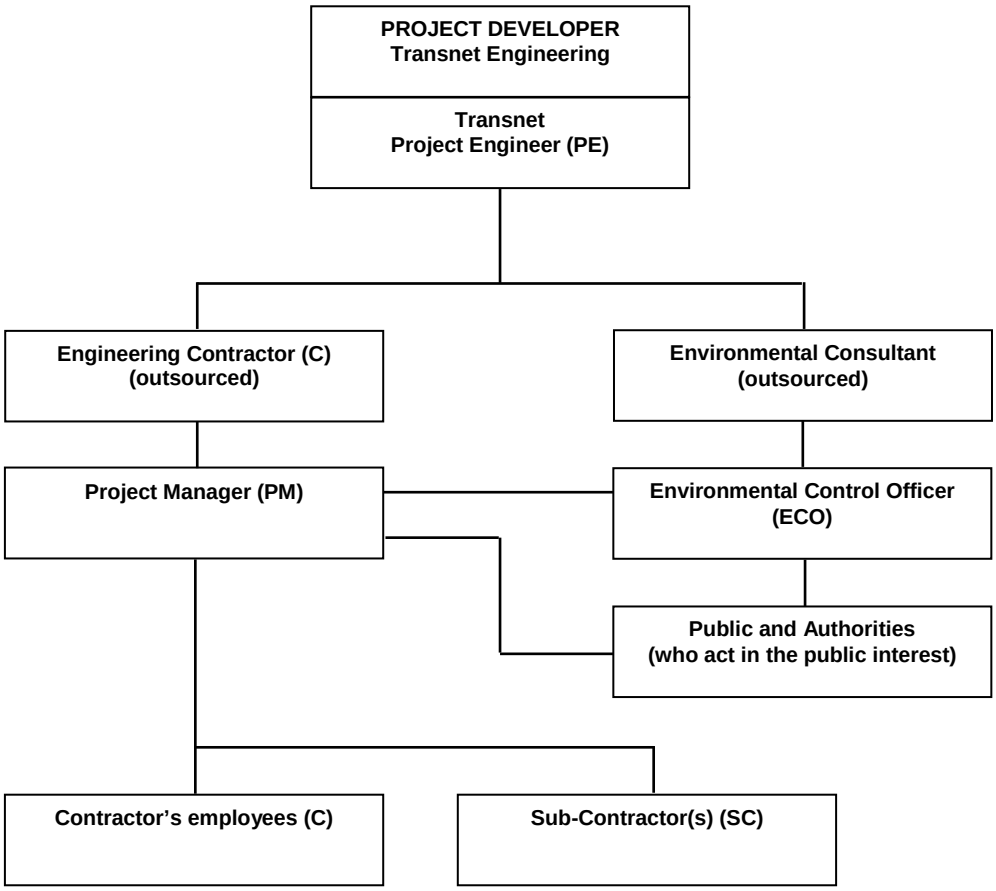


Figure 6-1: Organisational / Reporting Structure for implementation of the EMP

Transnet Engineering will appoint a Project Engineer (PE) who will represent Transnet for the proposed development. Transnet would appoint an Engineering Consultant / Contractor (hereafter 'Contractor' or 'C') to implement the project. Two separate appointments will be made; for the civil and electrical construction phases respectively. Transnet shall require each Contractor to appoint a Project Manager

(PM) to direct and monitor all contractor activities during the construction of the development.

Transnet shall appoint an Environmental Consultancy to fulfil the role of Environmental Control Officer (ECO) to oversee the implementation of the construction component of the EMP on site. It will be the responsibility of the ECO to consult with the PE and/or PM regarding instructions pertaining to contravention, corrective actions, and penalties or working methods. Except in an emergency situation, where instructions may be given directly to the Contractor's employees and sub-contractors, all instructions given by the ECO shall go through the PM.

The EMP will be an item of the monthly site meetings, and the ECO may attend these meetings in order to provide input with respect to compliance with the EMP. Copies of the minutes will be sent to Transnet.

Key roles and responsibilities of each party are outlined in more detail in **Section 6.2**. It is important to note that, while parties are assigned various environmental roles and responsibilities, parties are severally and jointly responsible to ensure compliance with all environmental legislation and best practice.

6.2 Roles and Responsibilities

Table 4 outlines the roles and responsibilities in terms of the EMP for the following parties:

- Provincial Authorities
- Transnet Project Engineer (PE)
- Transnet Environmental Manager
- Engineering Contractor (C)
- Project Manager (PM)
- Environmental Consultant and Environmental Control Officer (ECO)
- Sub-contractor (SC)
- Public, which include authorities who act on behalf of the public.

Contact details for all key role-players are provided in **Annexure A**. These must be updated as necessary throughout out the project phases.

Table 2: Organisational Roles and Responsibilities

Role	Responsibility
6.2.1 Provincial Environmental Authorities (Competent Authority)	
The Department of Environmental Affairs (DEA) is the authority responsible for compliance with all environmental legislation.	• Convey legal requirement for the EMP. • Give directives in terms of specific requirements for EMP specifications. • Review draft, final and revision EMPs. • Undertake spot inspections of the site at its own discretion. • Review ECO Audit Reports. • Request and view Environmental Incident Report. • Request and view the Complaints Register. • Issue directives, notices and/or fines for significant transgressions with the EMP or environmental legislation. While the DEA is ultimately the authority responsible for ensuring compliance with the EMP, various other authorities play a critically important role in directing and advising on matters relating to environmental compliance. These include inter alia the following: • The South African Heritage Resource Agency (SAHRA) and/or Amafa / Heritage KwaZulu Natali (Amafa) has legal competence over the management of heritage resources. In spite of the DEA's authorisation (assuming it is granted, SAHRA or Amafa may issue authorisations for the excavation and curation of heritage features and in general for the mitigation of heritage impacts. • The Department of Water Affairs (DWA) has legal competence with respect to water-related issues and compliance with Water Use Licenses in terms of the National Water Act. It will also need to license any potential water uses or water crossings and monitor compliance with the conditions of approval during its operation. • The local authority (eThekwini Municipality) has competence with respect to zoning and land use, as well as health–related issues, noise and other nuisance bylaws. • The Department of Labour has competence over labour conditions and occupational health and safety, and may conduct inspections of investigations in the event of disabling injuries. Although this is not strictly environmentally-related, there are a number of overlaps between environmental and occupational health issues where the Department may have an input. • Ezemvelo KwaZulu-Natal Wildlife has competence with respect to any biodiversity or wetlands. They are entrusted with the long-term conservation of the regions rich biodiversity.

Role	Responsibility
6.2.2 Transnet Project Engineer	
The PE assumes overall responsibility for the environmental aspects and management of the Transnet Locomotive Testing Shed Project. This includes compliance to all environmental regulatory and good management practice requirements for the duration of the project, in order to ensure effective minimisation of all environmental impacts. The PE is also responsible for the overall management and implementation, administration and enforcement of the EMP.	• Ensure that all designs appropriately incorporate the required environmental provisions as discussed in the Basic Assessment (BAR) and EMP. • Ensure that the EMP is finalised and adequately describes the minimum environmental regulatory requirements at the time construction commences. • Ensure that the final EMP is approved by all relevant authorities. • Ensure that the EMP specifications are included in all tender documents issued to prospective engineering consultants/contractors for the development works and activities on site. • Review and where necessary, revise the 'incident and associated penalty values list' and include the list in the tender document. • Ensure that the prospective Tenderers/Contractors adequately provide for the provisions of the EMP in their submissions. • Appoint the Engineering Contractor(s) and Environmental Consultants, and through them a PM and ECO respectively, for the duration of the construction period and ensure that their scope of work sufficiently covers responsibilities that will ensure implementation and compliance with the EMP and good environmental management throughout the project. • Ensure that the EMP is fully implemented and remains so, and when necessary is revised and updated. • Give instructions regarding the development and implementation of Method Statements. • Ensure that the Contractor develops and provides all required Method Statements. • Review the Method Statements, with the assistance from the Environmental Consultant/ECO, to confirm their conformance with EMP requirements as well as with reasonable practicality and financial feasibility and provide relevant feedback to the Contractor. • Approve acceptable Method Statements and inform the Environmental Consultant/ECO of such approval. • Keep record of all Method Statements and the associated review and approval status. • Review and approve drawings produced by the Contractor in connection with, e.g. construction site layout, road designs, construction stormwater management plan, etc. • Be liable / accountable, to the relevant authority, DEA, for any contravention/non-compliance by any Contractor under their supervision. • Liaise with the environmental authorities and Transnet Senior Management as and when necessary. • Establish and maintain regular and proactive communications with the Consultant/PM, Contractor and Environmental Consultant/ECO. • Assist the Contractor in finding environmentally responsible solutions to problems with input from the

Role	Responsibility
	ECO. • Undertake periodic audits, site visits and inspections to ensure that the environmental requirements are implemented. • Review and comment on environmental compliance assessments and/or reports. • Review the Complaints Register. • Give instructions on any procedures and corrective actions. • Report any significant environmental incidents or impacts to the relevant environmental authorities. • Deal with policing, fining, penalties and discrepancies. • Instruct the Contractor on the requirements and procedures in terms of environmental non-compliance 'near misses', incidents and public complaints recording, investigation and reporting. • Order the removal of, or issue spot fines for, person(s) and/or equipment not complying with the specifications. • Issue fines, penalties or 'work suspend' orders for contravention of the EMP and give instructions regarding corrective action to the Contractor/PM.
6.2.3 Engineering Contractor (Civil & Electrical Phase)	
The Engineering Contractor's role to implement and comply with recommendations and conditions of the EMP at all times. As such he needs to incorporate and cover all the relevant EMP requirements in the budget plans, detail designs, planning, sub-contactor appointments and all project implementation activities. The Contractor also needs too appoint an individual for the role of Project Manager.	• Study the EMP and all its specifications carefully and gain a full understanding of its implications. • Provide for full compliance with the EMP and all its relevant specifications in the submitted Tender; and/or provide motivation and/or alternative specifications through Method Statement(s) for any deviation from or 'tailor making' of the EMP for Transnet to consider. • Include all relevant EMP specifications in the tender documents and subcontractor appointments. • Avail him / her, as well as any employee he may identify, for induction training on the EMP by the ECO. • Notify the PE and ECO of the anticipated programme of works and fully disclose all details of activities involved (includes off-site activities associated with the project). • Prepare all the required / agreed Method Statements for submission to the PE and Environmental Consultant / ECO. • Sign off on approved Method Statements. • Provide appropriate training on the latest version of the EMP and all approved Method Statements to all employee and sub-contractors and keep record of such training (e.g. keep record of the date of training, version of the EMP the training was for, the employee/sub-contractor trained and their ID numbers and have the trainee sign off on the training received). • Appoint a competent, experienced and responsible individual as PM to administer and implement EMP with regard to engineering and construction. • Ensure that the EMP environmental specifications (of this document including any revisions, additions or

Role	Responsibility
	amendments) and all approved Method Statements are effectively implemented. • Implement on-site steps to mitigate environmental impacts. • Ensure that all employees and sub-contractors employed comply with the requirements and provisions of the EMP at all times. • Report any serious environmental incidents or impacts to the Transnet Project Engineer and ECO.
6.2.4 Project Manager	
The Project Manager (PM) oversees the construction programme and all construction activities performed by the contractor and as such also any EMP implementation, EMP compliance and environmental related activities, issues and impacts.	• Gain an in-depth understanding of the EMP. • Ensure implementation of all aspects and specifications of the EMP and approved Method Statements. • Oversee all site works. • Discuss implementation of and compliance with this document with Contractor employees and Sub-contractors at routine site meetings. • Be responsible for all Contractor employees and sub-contractors. • Enforce, oversee, monitor and verify the Contractor's and Sub-contractor(s)'s compliance with environmental legislation, the EMP and specifications and the approved Method Statements. • Inspect the site and surrounding areas on a daily basis with regard to compliance with the EMP • Monitor and verify that environmental impacts are kept to a minimum at all times. • Inform the PE and ECO of problems arising when implementing the EMP and recommend ways of improving it. • Assist the Sub-contractor(s) in finding environmentally responsible solutions to problems with input from the ECO. • Take action to address all EMP, Method Statement and/or environmental legislation non-compliances. • Notify the PE and ECO of any accidents and transgressions on site with respect to environmental management and non-compliance with the latest EMP version and approved Method Statements and seek advice from the ECO for required corrective actions and/or site remediation. • Instruct the Sub-contractor(s) on the requirements and procedures in terms of environmental non-compliance 'near misses', incidents and public complaints recording, investigation and reporting. • Report all 'near miss' incidents and actual incidents of environmental legislation and/or EMP non-compliances immediately to the PE. • Record all 'near miss' incidents and actual incidents and consequent corrective actions/remedial action taken in Near Miss Reports and Incident Reports and submit these within one week of the occurrence to the PM and ECO for signing off.

Role	Responsibility
	• Report and record all accidents, incidents resulting in injury or death or significant environmental liability immediately to the PE and ECO. • Record all public complaints received and immediately inform the PE and ECO thereof. • Ensure that suitable records are kept of all compliance status/feedback reports, incident reports and complaints register and that these documents are available for auditing by the PM or ECO at all times. • Keep records of all activities, 'near misses' and incidents concerning the environment, EMP compliance status and issues in the site diary and distribute associated reports to the PE and ECO. • Report progress towards implementation of and non-conformances with the latest EMP version and approved Method Statements at site meetings with the PE and ECO. • Prepare two weekly compliance status/feedback reports and submit these to the PE and ECO and keep copies thereof on record for the duration of the contract and at least three years after the contract expired. • Communicate to the Contractor employees and Sub-contractors, verbally and in writing, the advice of the ECO and the content of the ECO reports. • Designate and manage the working areas as per approved construction site layout, including sensitive environments. • Keep a register of all public complaints in the Site Office (to be situated in proximity to where the works are taking place) and deal with any community comments or issues. • Issue penalties for contravention of the EMP to Contractor Staff and Sub-contractor (as deemed necessary).
6.2.5 Environmental Consultant / Environmental Control Officer	
Fulfil an advisory consultancy, monitoring and reporting role with regard to overseeing the effective implementation and updating of the EMP. Making recommendations for addressing EMP and/or environmental legal non-compliances. Liaising with the relevant Environmental Authorities on any environmental issues to confirm their requirements, as and when required and communicating such requirement to the Transnet Project Engineer and/or PM. (Note that the Environmental	• Revise and update the EMP as and when necessary and submit such updates to the PE for review. • Submit copies of revised EMP to all relevant stakeholders for their information and review. • Advise the PE on necessary environmental authorisations and permits that would be required. • Prepare EMP introduction and environmental awareness training course material/manual and present this course to the PE, Contractor, PM and possibly sub-contractors, including any employee member they deem necessary, prior to them starting any work on site. • Keep record of everyone who attended the EMP introduction training course. • Review and comment on all Method Statements relevant to environmental management and make recommendations to the PE on whether or not to accept the Method Statement and/or any amendments or revisions required. • Make recommendations on any additional Method Statements that may be required as the construction

Role	Responsibility
Authorisation may specify that the ECO needs to be independent in which case Transnet needs to outsource this function.)	process progresses. • Develop a strategy and system (e.g. checklist) for site inspections and EMP compliance monitoring and audits. • Undertake regular site inspections and liaison with the PE and/or Contractor (meetings) to monitor, audit and verify that all works comply with environmental legislation and the EMP compliance; that environmental impacts are kept to a minimum; and ascertain the level of such compliance and impact minimisation. • Keep record of EMP implementation, monitoring and audits. • Prepare regular monitoring/audit reports which reflect the EMP compliance status, findings, issues and recommended actions for addressing non-compliances and submit these to the project team and relevant Environmental Authorities (DEA). • Review 'near miss' reports, incident reports and complaints register and recommend corrective actions. • Report any serious environmental incidents or environmental impacts immediately to the PM and PE. • Assist the project team in finding environmentally responsible solutions to problems. • Keep records of all activities/incidents concerning the environment on site. • Maintain a photographic record of the site before, during and after construction. • Advise the PM on the removal of person(s) and/or equipment not complying with the specifications. • Make recommendations to the PE and PM on the issuing of fines for transgressions of site rules and penalties for contravention.
6.2.6 Sub-contractor	
It is the Sub-contractor's role to implement and comply with recommendations and conditions of the EMP at all times.	• Study all relevant EMP sections, specifications and approved Method Statements carefully and gain a full understanding of the implications thereof. • Prepare and provide Method Statement(s) as per the PM's instructions. • Implement and comply with all relevant EMP sections, specifications and approved Method Statements. • Notify the PM of the anticipated programme of works and fully disclose all details of activities involved. • Avail him / her, as well as any employee he may identify, for induction training on the environmental requirements as per PM's instructions. • Implement on-site steps to mitigate environmental impacts. • Be responsible for it's employee. • Report progress towards implementation of and non-conformances with the relevant sections of the latest EMP version and approved Method Statements to the PM. • Inform the PM and ECO of problems arising when

Role	Responsibility
	implementing the EMP and recommend ways of improving it. • Notify the PM of any and all 'near misses', incidents, accidents and transgressions on site with respect to environmental management and non-compliance with the latest EMP version and approved Method Statements and seek advise from the PM for required corrective actions and/or site remediation. • Record all incidents and the corrective actions/remedial action taken in incident report and submit these to the PM for signing off. • Report and record all accidents and incidents resulting in injury or death immediately to the PM. • Record all complaints received and immediately inform the PM thereof.
6.2.7 Public and Authorities Acting on Their Behalf	
The public, as well as the authorities responsible of acting on behalf of the public, watches over the project and 'blows the whistle' on any non-compliances with the Environmental Authorisation and EMP. Note: While Interested and Affected Parties (I&APs) were given ample opportunity to participate during the BA process, I&APs will be encouraged to continue participating as 'watch-dogs'	• Monitor EMP compliance. • Register complaints on any EMP or MS non-conformances.

6.3 Compliance Monitoring and Reporting

As mentioned, EMP compliance is the responsibility of all the parties that make up the project team shown in Error! Reference source not found.. Similarly all these parties have a role to play in EMP compliance monitoring and reporting in accordance with the authority structure. For example Sub-contractors must monitor their own compliance and report any discrepancies, non-compliances or incidents to the PM, while the PM shall monitor the Contractor's and Sub-contractors EMP compliance on a day-to-day basis. The ECO has the role to undertake regular site inspections and audits and prepare audit reports, which shall be submitted to the PM and environmental authorities for their information and review.

The following inspection sheet and report templates are recommended for the construction phase and included in **Annexure B** respectively.

- Project Start Up Inspection Sheet
- Routine Site Inspection Sheet
- Construction Site Decommissioning Inspection Sheet
- Site Inspection Report Structure.

6.4 Non-compliances and Penalties

The Contractor shall effectively address and/or remedy all EMP non-compliances that may occur during the construction phase.

The PM, in consultation or on the advice of the ECO, shall issue penalties ('spot fines') if the Contractor infringes environmental specifications set out in this EMP. The decision on when to impose a penalty will be at the discretion of the PM or ECO and will be final. The Contractor shall be advised in writing of the nature of the infringement and the amount of the spot fine. The Contractor shall be liable for the fine and it is his responsibility to recover the fine from the relevant employee or sub-contractor. The Contractor shall also take the necessary steps (e.g. training) to prevent a recurrence of the infringement.

The Contractor is also advised that the imposition of spot fines does not replace any legal proceedings the authorities, landowners and/or members of the public may institute against the Contractor. In addition to the spot fine, the Contractor shall be required to remedy any damage caused as a result of the infringement at his own expense.

Spot fines shall be between R100 and R20,000, depending upon the severity of the infringement. For each subsequent similar offence, the penalty may, at the discretion of the PM be doubled in value to the maximum value to be determined by the PM.

A list of typical EMP non-compliance incidents for which penalties may incur and associated fine value is included in **Annexure C**. This list may be amended provided that the amended list is formally issued to the Contractor prior to an incident for which a penalty is imposed.

Examples of infringements for which spot fines will be imposed on the contractor are as follows:

- Using any areas outside the working areas without permission particularly within no-go buffers
- Clearing and/or levelling areas outside of the working areas without permission
- Spillage of fuels and other hazardous materials onto the ground or water bodies (wetlands)
- Picking/damaging plant material
- Injuring/killing or poaching animals/birds
- Untidiness and litter at the construction site

- Poor waste management on site
- Making fires on site
- Discharging effluent and/or contaminated stormwater onto the ground or into surface water
- Repeated contravention of the specifications or failure to comply with instructions
- Damage to public or private property or any identified heritage sites.

The PM shall retain records of all spot fines issued.

Money for the spot fines will be deducted from the Contractors monthly certificate.

6.5 'Suspended Work' Orders

The PM at his own discretion, or on recommendation from the ECO, may also order the Contractor to place on-hold or suspend part or all the works if the Contractor repeatedly causes damage to the environment by not adhering to the EMP (i.e. more than 3 cases of infringements). The suspension will be enforced until such time as the offending actions, procedure or equipment is corrected. No extension of time will be granted for such delays and all costs will be borne by the Contractor.

Work may also be placed on hold if a heritage artefact or feature or grave is uncovered. The Heritage authorities (Amafa) will need to be notified immediately.

Work may also be placed on hold to prevent a potential significant incident from occurring or spreading.

7 METHOD STATEMENTS AND STANDARD OPERATING PROCEDURES

Method Statements and Standard Operating Procedures (SOPs) for the proposed project must meet the Transnet standards and where applicable reasonably align and/or complement the existing Transnet Code of Practices (COPs) and SOPs.

7.1 Method Statements

Method Statements indicate in detail how the Contractor will achieve compliance with environmental legislation, good management practice and the Environmental Specifications described in **Section 8** during the construction phase and at the end of the project during demolition and site remediation. Method Statements may be required for any identified specific or group of activities for which it is considered necessary to implement a detailed method to mitigate potential environmental impacts. In addition to the Method Statements identified in this EMP, the Contractor, PM and/or ECO may require additional Method Statements for effective environmental management as the project unfolds.

Method Statements must meet the Transnet standards and reasonably align and/or compliment the Code of Practice (COP) and Standard Operating Procedures.

7.1.1 Procedures and Content

The Contractor shall submit written Method Statement to the PM for approval, and shall only implement a Method Statement once he has received the PM's approval in writing. On receipt of a Method Statement the PE shall forward a copy thereof to the ECO. The PM and ECO shall review the Method Statement and come to an agreement as to whether the Method Statement is acceptable or requires amendments.

The Method Statement shall state clearly:

- Timing of activities
- Materials to be used
- Equipment and staffing requirements
- Proposed construction procedure designed to implement the relevant environmental specifications
- The system to be implemented to ensure compliance with the above
- Other information deemed necessary by the Contractor, PM and/or ECO.

The Method Statement shall be submitted at least 14 working days prior to the projected commencement of work on an activity, to allow the PM and ECO time to study and approve the Method Statement. The PM shall strive to review and approve the Method Statement within 7 working days of receipt thereof.

Once a Method Statement is approved it binds the Contractor. The Contractor must therefore ensure that all activities to which the approved Method Statement applies is carried out accordingly.

Due to changing circumstances, it may be necessary to modify Method Statements. In such cases, the proposed modifications must be reviewed by the PM and ECO. The Contractor may only implement a revised Method Statement once he receives formal written approval from the PM to do so. The Contractor must also obtain approval from the PM and ECO for any deviation from a Method Statement.

The ECO and PM must retain records of any amendments to any Method Statement and ensure that the most current version of all Method Statements are being used.

7.1.2 Required Method Statements

Method Statements that are identified and required from the Contractor in terms of this EMP are listed in **Annexure E**. These cover, for example, the following activities:

- Location, layout and preparation of the construction camp(s) and materials storage areas
- Location, layout and preparation of cement/concrete batching facilities and/or cement plant/trucks/equipment wash bays, including the methods employed for the mixing of concrete and the management of runoff water from such areas (if applicable)
- Stormwater management plan
- Contaminated water management plan, including the containment of runoff and polluted water
- Incidence Response Method Statements (including details of methods for fuel spills and clean-up operations)
- Solid waste management and removal of waste from site
- Site remediation.

Note that specific activities and/or environmental impact mitigation for which Method Statements are required are tagged with **{Method Statement}** in **Section 8**.

As mentioned, additional Method Statements may be identified and required by the Contractor, PM and/or ECO as the project unfolds.

7.2 Standard Operating Procedures

Similar to Method Statements, Standard Operating Procedures (SOPs) provide detail on 'how' specific environmental requirements will be developed, implemented, maintained and/or adhered to, but this during the operating, maintenance and decommissioning phases of the project.

SOPs, once approved, must be incorporated into and then form part of the Transnet's Environmental Management System for the TE complex. As such they bind Transnet and its employees in terms of their commitment to sound environmental management.

Note that specific activities and/or environmental impact mitigation for which Method Statements are required are tagged with **{Standard Operating Procedure}** in **Section 8**.

8 LIBRARY OF ENVIRONMENTAL SPECIFICATIONS TO ADDRESS THE SPECIFIC ASPECTS AND IMPACTS

This section covers the requirements for managing and controlling various specific aspects and environmental impacts of project related activities associated with the construction of the steel shed over the existing locomotive testing area, to ensure that impacts on the environment are appropriately mitigated. The specifications are based on the mitigation measures identified through the Basic Assessment process.

The specifications are worded in the form of instructions, which indicate that such a specification **'must' / 'shall'** be followed or adhered to. This is unless the wording clearly indicates a specification to be conditional or a recommended option.

For ease of reference, colour coded bars have been added on the left side of each specification to indicate the relevant primary responsible party or parties:

Applicant:	Transnet Project Manager, HSE Manager, Resident Engineer, as the case may be.	
Contractor:	All contractors and/or subcontractors working on the site to implement the project, with the lead contractor(s) fully responsible for compliance.	
ECO or Auditor:	Environmental Control Officer or Independent Environmental Auditor (individual or company).	
Specialist:	A variety of specialists that may be consulted or appointed during the roll-out of the project (N/A in this case)	

Ultimately the applicant remains accountable for effective and complete implementation of the Environmental Management Programme (EMP) throughout the project life cycle. However, the Applicant may award lead responsibilities to a contractor or specialist by way of contractual arrangements in combination with this EMP. For ease of reference, the following coding forms part of the specifications:

"#":	Indicates, where applicable, the party with the lead responsibility; with any other indicated parties either having an advisory, supporting and/or monitoring role, or in the case of the applicant a 'directory' and/or approval role.
More than one "#":	Indicates both the contractor and applicant as lead parties but for different phases of the project; namely the contractor 'must' / 'shall' take the lead responsibility for the specification during the construction phase while the applicant is responsible for the operational phase and/or the decommissioning phase.
No "#"	Indicates full responsibility for all indicated parties to consider, implement and/or adhere to the specification in all the work / tasks they do on the Project.
"&"	Indicates where ECO or specialist consultation is compulsory.

To provide for consistency and continuity in EMP compliance throughout the project life-cycle and to minimise duplication of specifications, colour coded bars in the right margin indicate for which phase or phases of the development a specification applies:

Planning & Design:	Spans the pre-construction phase; including master planning, contractor tendering and appointment, detail site surveys / investigations.	
Construction:	Spans the period from site demarcation for construction purposes up to the handover of the site to the applicant for main commissioning.	
Operation:	Spans the phase from the start of the main commissioning phase until operation of the facility finally ceases before full decommissioning.	
Decommissioning:	Spans decommissioning, dismantling, demolition and clearing of facilities, structures and infrastructure; as well as the final site remediation.	

For purposes of this EMP, the main commissioning of the locomotive testing shed is considered forming part of the Operational Phase. However, certain commissioning activities, e.g. commissioning of ancillary facilities, may for practical reasons form part of the Construction Phase. The exact handover phasing will be determined through contract negotiation.

Furthermore:

[ ]:	While specifications should generally be considered an 'ongoing' responsibility; where applicable and appropriate, specific time or frequency requirements are flagged or shown in block brackets.
{Method Statement}:	Indicates specifications that require an appropriate Method Statement to be developed, submitted for approval to the applicant (and accepted by the ECO) and thereafter implemented for effective implementation of the specification.
{SOP}:	Indicates specifications that require a Standard Operating Procedure (SOP) to be developed, endorsed by the Project Manager (PM) and ECO, incorporated and implemented as part of the site's Operational and/or Decommissioning EMP.

For ease of reference, specifications have been organised and grouped in the following subsections:

- Protection of Biophysical Environments
- Protection of Socio-economic Environments
- Protection of Heritage
- Overall Site Management
- Specific Construction Activities.

8.1 Protection of Biophysical Environments

Applicant (Transnet) | Contractor | ECO / Auditor | Specialist | Environmental Specifications | Planning & Design | Construction | Operation | Decommissioning

8.1.1 Hydrology, Erosion and Sedimentation and Surface Water Quality

The proposed site has no natural habitats as the entire site is hardsurfaced. However, the closest natural environment is the Umhlatuzana Canal which is an artificial watercourse.

While it is recognised that the Umhlatuzana Canal has already been severely compromised and impacted cumulatively by density urbanisation and industrialisation that surrounds it, remaining natural attributes and resources still have some value and must be awarded due protection. While the proposed project will not impact directly on the Canal, any pollution from the site, albeit small in comparison, may contribute to the cumulative pollution of the Canal.

1. Demarcate and prohibit entry into no-go areas.
2. Locate the construction camp (if any) (and laydown areas) outside the 32m buffer of the Canal.
3. Prohibit the use of natural surface water sources only municipal water (or from another legal source) may be used on site.
4. Prevent and minimise as far as possible the impact of flood hazards.
5. Engineer proper management solutions (e.g. slopes shaped at a natural angle of the repose, discharge rates, discharge quality, scouring minimisation) to the flow of surface runoff to minimise erosion of stockpiles and contamination of the canal, most notably from hardened surfaces such as roads and buildings.
6. Maintain the existing stormwater management system (refer to **Section 8.4.9** for further details). **{Method Statement}** / **{SOP}**
7. Stabilise and manage cleared areas (if any) to prevent and control erosion by applying a suitable method of stabilisation. **{Method Statement}** / **{SOP}**

8.1.2 Wet Areas (uMhlatuzana Canal)

The only area of slight concern for the proposed project is the location of the uMhlatuzana Canal which borders the site to the Northwest. It is a canal (artificial watercourse). The Umhlatuzana Channel is also known as Umbilo Canal, Umbilo Channel. In some sections, the uMhlatuzana canal supports a large number of mainly wading birds and swamp- or marsh-loving species.

8. Include a 1:10 000 scale map on the *Site Layout Plan* (refer to **Section 8.4.2**) which clearly shows the proximity of site footprint and construction activities in relation to the Umhlatuzana Canal.
9. Locate roads, pipelines, cable routes or other structures as far as reasonably possible away from the Canal.
10. Clean up any spills close to the Canal immediately (refer to **Section 8.5.6**).

8.1.3 Flora

With the site being a complete 'brown field' site, no natural features or habitats exist on the site.

&

1. Identify and manage all declared aliens in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) and eradicate alien invasive vegetation systematically and fully. **[Ongoing]**, **{Method Statement}** / **{SOP}**
2. Make use of indigenous species for greening and landscaping (within reason).

8.1.4 Fauna

The industrial nature of the area restricts the existence of any faunal species on the proposed sites. However the surrounding Umhlatuzana Canal may be inhabited by various amphibians, small reptiles, small mammals, birds and insect species.

8.2 Protection of Socio-Economic Environments

Applicant (Transnet) | Contractor | ECO / Auditor | Specialist

Environmental Specifications

Planning & Design | Construction | Operation | Decommissioning

Transnet Engineering is the backbone of South Africa's railway. However due to the absence of a building at their operations in Durban, Transnet employees working in this area, as well as the maintenance equipment they use, are constantly exposed to the elements such as rain, sun, dust and wind. This exposure therefore directly affects the productivity and may affect employee's health and safety. By impacting on productivity and the health and safety of the employees it becomes a societal priority, decreased productivity can reflect badly for South African businesses reliant on Transnet Engineering and the economy as whole. Potential negative socio-economic impacts should be mitigated as indicated in the subsections below.

8.2.1 Public Health and Safety

1. Take appropriate and effective precautions and all reasonable measures to ensure the safety of people in the surrounding area.
2. Fence the site and control access to the site and prohibit unsupervised public access to the site (particularly since there is a high voltage risks)
3. Use all public roads responsibly (refer to **Section 8.2.3** for further details).
4. Deal with transgressions by staff with regard to public health and safety severely (Transnet).

8.2.2 Public and Service Infrastructure Use and Impact

A project of this magnitude will place a small demand on local social services. Appropriate planning well in advance of such demands or impact is however still essential.

1. Negotiate and liaise with local authorities, well before construction, to determine what the needs are for potential use of municipal services (if any) (water, electricity, sewage wastewater disposal).
2. Ensure that all affected communities and stakeholders are kept well informed of the process and of all significant dates attached to the development process. **[Ongoing]**
3. Protect all public and private service infrastructures (e.g. pipelines, conveyors, cables) by clearly marking these or incorporating the relevant servitudes into "No-go" areas (where relevant)

4. Ensure that all essential services are in place prior to the development and all other facilities to be used are appropriately upgraded and equipped.
5. Ensure that the implementation process is carefully monitored and that any disruptions are immediately identified and appropriately managed.

8.2.3 Traffic and Use of or Impact on Public Roads

Since the site lies alongside Solomon Mahlangu Drive and is within the confines of the Transnet Engineering's existing facilities, access to the site will be via Solomon Mahlangu Road. An existing access road is currently available through a security check point and will likely be used for this project. Due to the scale of this project there is not likely to be a significant impact on the traffic or public roads. During the construction, there will not be many construction vehicles on site and if any impacts, they will be short term impacts on the immediate surrounding areas.

1. Liaise with the relevant traffic and transportation authorities (eThekwini Traffic Authority and/or Department of Transport) on envisaged traffic impacts, e.g. on transportation of bulky equipment (where applicable).
2. Ensure that for any abnormal loads the weight and/or height and turning restrictions are verified for the proposed route to be followed. **[Prior to transporting abnormal loads]**
3. Provide adequate signage to notify drivers of the increase in heavy vehicles entering and exiting the site access as a result of construction, major maintenance and/or demolition.
4. Keep all traffic rules and road safety regulations on public roads, including e.g. speed limits, vehicle registration, transport emergency card listing the hazards and emergency information for a material being transported (tremcards); and follow all orders from traffic police and the Department of Transport.
5. Train staff to show respect to other road users and give public vehicles the right of way.
6. Maintain all construction / operational vehicles using public roads in a roadworthy condition and refrain from using non-roadworthy vehicles on public roads.
7. Keep any required disruption of public roads as short as possible to minimise public inconvenience for both planned and unforeseen events.
8. Secure all loads for transport effectively and cover vehicles transporting materials such as sand, scrap metal and pipes effectively, to prevent their contents falling or blowing off, causing traffic hazards.

8.2.4 Community Relationship and Influx of Job Seekers

Management and control of community relationship and influx of job seekers is important to avoid social problems such as public unrest.

1. Where reasonably possible, make use of local labour and local suppliers of material for the construction.
2. Train staff to respect the property and needs of the adjacent landowners and public areas to minimise any unnecessary disturbance.
3. Ensure that adequate lines of communication are established between Transnet, the contractors, neighbouring landowners and the public at large to deal with any public grievances.
4. Engage proactively with local authorities/ SAPS/ Community Policing Forums to ensure that job seekers do not settle in the vicinity of the construction site. **[When necessary]**
5. Formulate a rapid response plan to deal with security matters.

8.2.5 Creation and Securing of Employment Opportunities

1. Meet the requirements of the government policies for procurement and employment, as are applicable to Transnet as a parastatal organisation, to take care of and avoid potential conflict between people in the immediate surroundings seeking employment and those from elsewhere.

8.2.6 Visual Impact and Aesthetics

The project only entails constructing a steel shed over an existing locomotive testing area within the confines of the TE premises, which is industrial in nature. There will be no visual impact to road users or residents within the areas. The proposed steel shed will fit into its surroundings.

1. Ensure that the contractor plans the construction site layout appropriately, including materials stocking, waste management and temporary latrine areas, by providing a layout plan which the ECO must approve prior to the contractor occupying the site (refer to **Section 8.4.2**).
2. Implement appropriate waste and rubble management and disposal procedures.
3. Implement effective litter control measures
4. Apply effective dust suppression techniques (refer to **Section 8.4.11**) to suppress dust generated during earth moving and vehicles travelling on roads to and from exposed areas, bearing in mind that airborne dust is often visible from far, and is visible at night as it diffuses light and coats vegetation with an unsightly layer of settled dust.

8.3 Protection of Heritage Resources

Due to the nature of the proposed site and that it is within an existing industrial brownfields site, a heritage specialist was not considered necessary. The site does not have any above ground heritage resources. The site is also already provided with a hard surface and artefacts are unlikely to be recovered during construction.

However should any heritage artefact be discovered, mitigation measures are provided below:

Applicant (Transnet)	Contractor	ECO / Auditor	Specialist	Environmental Specifications	Planning & Design	Construction	Operation	Decommissioning

8.3.1 Overall Management of Protected Heritage Resources

	#			1. Monitor any excavations to establish any heritage finds.				
	#		&	2. Place any excavations on hold, should any heritage features or artefacts, or skeletons or bones that could potentially be from human origin, be uncovered.				
	#		&	3. Maintain records of heritage findings found buried in sediments.				
	#			4. Report heritage finds to the ECO and Project Manager.				
		#		5. Report heritage finds to the heritage authorities.				
#				6. Report any potential heritage features uncovered during the construction activities to the ECO and Amafa / Heritage KwaZulu Natali (Amafa) and follow any instructions they may give.				
#				7. Report all confirmed heritage finds to the Department of Environmental Affairs.				

8.3.2 Procedures on Discovery of Potential Heritage Artefacts and or Features

#	#			1. Follow the following procedures on discovery of any potential heritage/ archaeological sites/ objects (including artefacts, fossils, bones, etc.):				
				• Pause all further clearing, excavation and/or other construction at the discovery site and surrounding area immediately on making the find until further notice from the appointed archaeologist				
				• Notify the site supervisor/manager (PM) and ECO immediately				

[without any delay]

- Note the location of the sites/ objects and ensure that such sites/ objects are not disturbed/ destroyed (any further), e.g. notify all staff working in the vicinity of the 'temporary "No-go" area and cordon off the location with danger tape
- Hand over isolated finds that are turned up immediately to a designated person for safekeeping, noting as far as possible where they came from
- Keep excavated material which includes the discovered artefact without further disturbance in a temporary stockpile for safekeeping, for inspection by a palaeontologist.

8.4 Overall Site Management

Applicant (Transnet) Contractor ECO / Auditor Specialist
Environmental Specifications
Planning & Design Construction Operation Decommissioning

8.4.1 General Preparedness and Administration

To achieve effective environmental management and ensure continued environmental due diligence and on-going minimisation of environmental harm, it is necessary to ensure that all personnel have the appropriate level of environmental awareness and competence. Transnet and its contractors / service providers therefore need to ensure that suitably qualified and trained staff is appointed to understand and deal with the potential environmental sensitivities and requirements. Transnet employees, service providers, Contractors and Sub-contractors and visitors therefore need to be aware of the responsibilities in terms of the relevant environmental legislation and the contents of this EMP and the specification and procedures they must adhere to.

1. Ensure that all personnel have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and on-going minimisation of environmental harm.
2. Ensure that all visitors to the site are made aware of and adhere to the

environmental and other site requirements.

3. Provide for and ensure that any new staff, at all levels of responsibility, that are to work on site undergo a compulsory ECO-accepted initial / induction environmental awareness training session on the following topics; prior to any work commencing on-site:

   - A basic understanding of the key environmental features of the site and the surrounding environment
   - Key potential environmental related impacts and related environmental precautions, which need to be taken to avoid, minimise or mitigate these impacts
   - The requirements of the EMP and associated environmental specifications as they apply to the Locomotive testing Shed project
   - The requirements in terms of procedures and conduct when dealing with the public and/or using or impacting public or private places, services or infrastructure
   - "No-go" areas, issues and programmes that need to be considered and/or implemented
   - Waste management and litter control
   - Key mitigation measures to be implemented during project activities
   - Emergency responses to issues
   - Responsibilities towards the public
   - Linkages between environmental and occupational health and safety protection and management (taken that a separate Occupational Health and Safety Programme will be introduced)
   - Roles and responsibilities of all staff on the Project site
   - The benefits of achieving conformance with, and consequences of transgressions of environmental specifications or requirements of the EMP
   - Awareness of any other environmental matters, which the Project Manager (PM) and/or ECO deemed to be necessary.

4. Ensure that all site staff remain appropriately trained, aware of and understand the contents and conditions of the EMP, the key environmental issues and the consequences of non-compliance that are relevant to the activities in which they are or will be involved, including but not limited to the following:

   - Inspect work regularly to ensure that environmental requirements are appropriately implemented, maintained and adhered to and address staff to encourage good and discourage poor environmental management practices

- Maintain 'environmental compliance' as a standing topic on routine site management meetings
- Hold regular 'tool-box' talks to train and raise environmental awareness amongst staff
- Discipline staff for serious and/or repeat offences.

[Ongoing], {Method Statement} / {SOP}

5. Ensure that records are kept of all staff members that attend training sign an attendance register or form; and retain the associated attendance records for at least five years. (Training certificates may also be issued.)
6. Undertake all work in an environmentally sensitive manner and strictly prohibit any impact on any declared "No-go" areas.
7. Enforce all legislation, policies and procedures applicable to the development strictly.
8. Adhere to this EMP and all approved Method Statements / SOPs strictly, and where this is not possible / feasible follow the relevant procedures to apply for approval of an appropriate update or amendment thereto.
9. Ensure that the latest version of this EMP (or any applicable parts thereof) form part of any contractual agreements with Contractors and Sub-contractors for any appointments related to the execution of the project (e.g. site inspections, site probes, site surveys, site clearing, construction, commissioning, services, maintenance, upgrade, decommissioning, demolition, remediation, rehabilitation, etc.).
10. Ensure that the latest version of this EMP forms part of an Environmental Management System (EMS) for the construction, operational and decommissioning phases of the project (in line with ISO14001).
11. Adopt a precautionary approach whereby any work that would deviate from the Environmental Authorisation, EMP specifications, approved Method Statements and/or Safe Operating Procedures be approved by both the Project Manager / Facility Operations Manager and accepted by the ECO.
12. Keep the following records on site in accordance with the standard Transnet site documentation and ensure that such documents are signed by all the relevant parties:
    - Physical access plan
    - Complaints register
    - Site daily diary
    - Records of all remediation/ rehabilitation activities

- Copies of reports to the Environmental Control Officer
- Copy of the Construction Method Statements / Safe Operating Procedures
- Fire Protection Association Plan
- Environmental Incident Register
- ECO inspection audit reports
- The Environmental Authorisation issued for the project
- An appropriate fines system for non-compliance will be developed and implemented.

8.4.2 Site Elevation and Footprint Development, Layout Planning and Establishment

1. Ensure that the footprint of the construction of the Locomotive testing Shed Facility, associated infrastructure and access road take all the environmental characteristics of the site into account as indicated in **Section 8.1**.
2. Take all the relevant biophysical environment protection specifications into consideration when planning and designing the site and construction areas footprints and layout as well as the access route (in accordance with **Section 8.1**).
3. Restrict the footprint of the development to the smallest area possible, taking into consideration that while the actual footprints of the building may be fixed, other areas are likely to be more flexible in their extent, e.g. areas for lay down, storage of topsoil, parking, etc.
4. Minimise the impact outside of the site security fence.
5. Develop and provide a Site Layout Plan for the construction phase, which takes the above listed environmental specifications into consideration, by showing the overall site layout, including but not limited to:
   - Site boundaries
   - Contractor yard site allocations
   - On-site “No-go” areas, that are to remain undisturbed
   - Footprint of the Facility and associated service infrastructure and facilities
   - The access road, large vehicle turning areas
   - Security access points / gates

- Material (e.g. construction material, diesel/ petrol) and equipment storage and lay-down areas
- On-site main road servitudes
- On-site main stormwater management system and sedimentation traps
- Areas earmarked for central construction service facilities, e.g. water system and facilities, waste handling facilities, construction offices, ablutions, canteens, vehicle wash bays and service station, fuel storage and station, topsoil and spoil stockpile, concrete batching facilities, excess concrete storage, etc.

{Method Statement}

8.4.3 Site Demarcation, Signage, Fencing and "No-go" Control

1. Survey and demarcate the site and construction areas accurately and in accordance with the Site Layout Plan to establish the permitted footprint.
2. Control access to areas of the site that are not involved in construction or operation of the plant.
3. Fence the main development footprint and any satellite construction / operation sites off to allow site access control and prevent unauthorised access (refer to fencing specification as provided in **Section 8.1.4**). **{Method Statement}**
4. Institute and consider all areas on the applicant's owned property outside the formerly demarcated and fenced in development areas strictly as "No-go" areas, unless the Project Manager provided specific written permission for these area to be accessed.
5. Prohibit / refrain from commencing with any construction activities (other than for access roads and fencing) prior to the site being fenced off and working areas secured.
6. Dedicate and demarcate suitable on-site areas for material, equipment, waste, topsoil and spoil stockpile areas in accordance with Site Layout Plan prior to commencing with construction activities.
7. Erect and maintain appropriate safety and environmental risk precaution signs prior to commencing with construction activities.
8. Dedicate and demarcate on-site "No-go" areas and off-site "No-go" areas that are at risk by suitable fences where reasonably practical; and if not with danger tape and/or "No-go" sign boards.

8.4.4 Access Road Development, Maintenance and Use

Access to the site already exists.

9. Design, implement and maintain the access road such that runoff is dissipated in side drains/ swales, rather than concentrated in lined channels.
10. Use public roads in accordance with specifications in accordance with **Section 8.2.3**.

8.4.5 Staff Facilities Development, Operation and Maintenance

1. Develop an overall Site Facility and Service Plan for effective provision and phasing in / out of staff facilities and services, based on best estimates of such requirements by all the resident staff, contractors and their sub-contractors on site; and include such a plan in the contractor tendering and agreement process / operational EMS.
2. Install services, such as drinking water, ablution and sewage facilities, as soon as possible after construction activities commence; and ensure this is done in accordance with the Site Facility and Services Plan, unless the Project Manager permits or directs otherwise. **{Method Statement}**
3. Design, implement and maintain sanitation facilities and associated systems for containment, treatment and/or disposal of raw sewage and sewage sludges such that potential leakage or spillage is effectively prevented and that any 'clean' wastewater is discharged in accordance with all legal requirements. **{Method Statement} / {SOP}**
4. Provide adequate temporary chemical toilets on site, during periods where more permanent ablution facilities have not yet been provided, are insufficient and/or located far away from an area of work, as follows:
   - Provide for a suitable ratio of toilets per number of employees (usually at least 1 toilet per 15 employees)
   - Provide for toilets to have hand wash facility either within the toilet cubicle or adjacent thereto
   - Locate toilets (porta loos) outside the 1:100 year floodline and preferably away and/or hidden from public roads, residential areas and other public places
   - Secure toilets (porta loos) firmly to prevent them from toppling over due to wind or any other cause
   - Appoint a service provider to remove sewage from the chemical toilets and/or sewage sludge from package plants on a regular basis;

and provide and ensure for this sewage / sewage sludge to be disposed of at a municipal sewage treatment plant or alternatively on an appropriately designed on-site sewerage treatment plant

- Clean the sewage system out regularly and immediately before long weekends, builders holidays and work breaks; and disposed the sewage to the municipal sewage system
- Ensure that no spillage occurs when the toilets are cleaned or emptied and that the contents is properly stored and removed from site
- Keep toilets locked after working hours.

{Method Statement} / {SOP}

5. Prevent any sewage from on-site sanitation facilities to leak, seep or spill onto the ground or into the surface or groundwater; and conduct regular checks and if necessary repairs.
6. Connect permanent ablution facilities to the local municipal sewer system.
7. Prohibit staff from abluting anywhere other than in toilets.

8.4.6 Water Supply, Abstraction and Consumption

8. Install site services for water provision, as soon as possible before the main construction / operation activities commence but provided that the required approvals/licenses have been obtained, e.g.:
   - Connect to a water reticulation system, preferably tapping into the existing municipal supply scheme
   - Provide for water to be brought in by tanker from an appropriately licensed local water supplier (temporary arrangement).

{Method Statement} / {SOP}

1. Refrain from making use of and/or collect water from any source other than those pointed out in the approved Method Statement / SOP.
2. Ensure that no natural surface water sources (i.e. streams, rivers, wetlands) or groundwater sources are used; e.g. in situ to wash / clean plant or equipment, and/or for any water abstraction (other than for emergency fire fighting).
3. Minimise use of freshwater, prohibit water wastage, and train and encourage all staff to use water sparingly.

8.4.7 Materials Management

1. Include a requirement in the tender contract for the contractor(s) to provide a method statement(s) for hazardous substances management during construction, site remediation and/or demolition and ensure that the method statement(s) be approved by the appointed ECO, and if required the Emergency Services Department and Environmental Department, prior to commencement of remediation and construction. **{Method Statement} / {SOP}**
2. Solicit expert advice and or services for appropriate safe handling of any potentially toxic or hazardous substances (e.g. unidentified substances or items that could potentially be hazardous).
3. Prohibit pollutants such as cement, concrete, lime, paint, oil, chemicals and diesel / petrol fuels from discharging into any water source (canal) and/or polluting open ground.
4. Follow the specification for cement and concrete management (refer to **Section 8.5.3**).
5. Adhere to all relevant national, regional and local legislation regarding the transport, use and disposal of hazardous waste at all times.
6. Provide and design sufficient materials handling facilities that provides for and meets all the relevant specifications of this EMP.
7. Avoid locating materials storage areas in close proximity to ecologically sensitive areas (Umhlatuzana Canal) and inside the 1:100 year flood line of watercourses.
8. Obtain, keep on record, make use and avail Material Safety Data Sheets (MSDSs) for all hazardous substances brought / used on site.
9. Ensure that all staff handling hazardous substances are adequately informed about the specific hazards, equipped with appropriate Personal protective Equipment (PPE) and suitably trained in the handling of the specific substances and hazards.
10. Implement appropriate health and safety precautions to avoid employee and/or public exposure to any contaminant or hazardous substance, which in addition to hazardous substances for construction purposes may potentially include certain historically dumped wastes, spilled substances and leachate.
11. Develop and implement procedures for safe material transportation, storage and handling. **{Method Statement} / {SOP}**
12. Develop and implement emergency procedures / protocols to quickly and effectively repair any hazardous substance leakages and follow

effective spill clean-up procedures (refer to **Section 8.5.6**). **{Method Statement} / {SOP}**

13. Maintain a register of spills, incidents and 'near-misses' involving hazardous materials; and compile and keep on record investigation reports for all such events involving significant quantities and/or very hazardous substances or where the Project Manager /or ECO requires such a report to be compiled.
14. Report any significant spills immediately to the Emergency Services Department, ECO, DWA, Environmental Department and other relevant authorities.
15. Clearly dedicate and demarcate areas for the storage of hazardous substances including hazardous waste and industrial effluent.
16. Train all staff handling hazardous substances and waste on the requirements in terms of the specific substance they handle, including requirements in accordance with the substance's MSDS and abovementioned procedures and protocols.
17. Safeguard hazardous substances from being stolen, vandalised, catching fire or spilling on open ground.
18. Obtain all necessary approvals with respect to storage of hazardous substances from the appropriate authorities; e.g. diesel/ petrol fuel storage and dispensing, keeping and using of explosives, keeping of pesticides, etc.
19. Ensure that areas of fuels storage and other flammable materials comply with standard fire safety regulations and any conditions of approval of the local Fire Prevention Officer as well as the Major Hazardous Installation Regulations (OHS Act) if required. **{Method Statement} / {SOP}**
20. Provide some appropriate form of secondary containment to all portable chemical containers.
21. Design, construct and allocate bunded areas (i.e. concrete platforms with bund walls or inward slopes) to accommodate hazardous liquid substances (such as e.g. fuel, oil, paint, bitumen, herbicide and insecticides) to guard against infiltration of hazardous substances into the soil, groundwater or surface water, in accordance with the following design criteria:
    - Adhere to all relevant legislation
    - Effective containment of the particular material stored by selecting an appropriate impermeable material for the construction of the bund
    - Effective segregation for safe storage of incompatible material
    - Bunded area to have a holding capacity of 110 % of the total volume

of the hazardous substance to be contained (or apply SANS10089-1:2008 to bunding for multiple large tanks)

- A roof over the bunded area, wherever reasonably practical, to minimise collection of rain water within the bunded area
- Means for safe access to the bund for regular inspections and maintenance
- Appropriate emergency and safety equipment, e.g. tank failure alarm, fire alarm, fire fighting system and equipment, etc.
- A system or for means to safely mop up or remove any spilled hazardous material without causing any environmental pollution
- A system, e.g. valve or submersible pump, to effectively drain or remove any accumulated rainwater on a daily basis when it is raining.

22. Refrain from storing any material in a bund, other than what the bund provides for in terms of the design criteria given above.
23. Keep bunded areas spill free by removing and mopping up any spilled material immediately in accordance with the spill clean-up specifications referred to in **Section 8.5.6**; and remove or drain any accumulated uncontaminated water on a daily basis.
24. Provide for storage, handling and disposal of fuels, oils, lubricants and other potentially harmful chemicals (and their containers) to be done under proper supervision in accordance with the manufacturer's instructions (e.g. Material Safety Data Sheets (MSDS)).
25. Follow the vehicle and plant refuelling and maintenance procedures as specified in **Section 8.5.5**.
26. Follow the spill clean-up procedures as specified in **Section 8.5.6**.
27. Ensure that any delivery drivers are informed of all procedures and restrictions (including "No-go" areas) required to comply with the EMP, and ensure that these delivery drivers are supervised during the off-loading by someone with an adequate understanding of the requirements.
28. Ensure that materials are appropriately secured and contained to ensure safe passage between destinations without any loss or spill of material along the way.
29. Prohibit smoking in the vicinity of hazardous substance storage areas and erect and maintain "No smoking" and "Danger" signs at such areas.
30. Consider and treat all empty and externally dirty containers (e.g. tanks and drums) that contained hazardous substances as hazardous materials, e.g. by ensuring safe storage in bunded areas or by providing other means to prevent any spillage from these; this is unless the containers have been appropriately and fully drained and cleaned to

render them non-hazardous. **{Method Statement} / {SOP}**

31. Prohibit removal of empty containers that had contained hazardous substances for use (other than its intended use) or for taking off-site (other than for suitable disposal), e.g. by perforating used containers.
32. Ensure that adequate spill management equipment is available in the immediate vicinity where hazardous substances are used and/or stored. Where spill kits are used, they need to be properly stocked at all times.

8.4.8 Waste Management

1. Develop and implement a detailed on-site Waste Management Plan, prior to the relevant waste generating activities commencing, covering inter alia:
   - Identification, classification and keeping of a register of type of waste generated
   - Planning for the construction / establishment / operation / decommissioning of a centralised waste management facility and/or designated waste management areas
   - Procedures to be followed for waste separation at source as well as reduce, re-use, recycle, recover and treatment of waste prior to the disposal option
   - Waste management procedures for waste disposal, e.g. storage, disposal, keeping of waste consignment certificates, etc.

{Method Statement} / {SOP}

2. Minimise production of all solid, liquid, and gaseous radioactive waste, both in terms of volume and activity content.
3. Ensure that all conventional waste is properly disposed of and removed from the site to a permitted landfill site, or where applicable to an appropriately licensed waste recycling facility.
4. Dispose of all contaminated soil, excavated waste and solid waste material generated or uncovered, at a permitted landfill site that is authorised to accept the particular waste.
5. Obtain safe waste disposal certificates for all wastes disposed and retain and keep these certificates on record for proof of appropriate disposal for at least 3 years (or alternatively in accordance with any other Municipal requirements).
6. Dispose of sewage in a sustainable manner that will fully prevent any raw or treated sewage to contaminate surface water, wetlands or groundwater; entailing one of or a combination of the following:

- Connect an on-site sewerage system to an existing off-site system
- Provide for the collection by tanker and transportation and disposal to a local municipal sewage treatment work.

7. Provide for appropriate recycling of waste, e.g. disposal of any waste oils to a suitably qualified external oil recycler.

8.4.9 Stormwater Management

Effective stormwater management is necessary at all phases of the project and is vital in terms of protecting the site from being flooded as well as ensuring that environmental degradation is prevented / mitigated.

The site is already provided with hardstanding (tarred surface) and runoff is currently directed to the existing stormwater system of the TE Premises. Rainwater from the roof of the new Shed will tie into the existing storm water system which has no discharge to the uMhlatuzana Canal that borders the proposed site.

Note: For the purposes of this EMP the following definitions apply:

"Dirty" water – means water that is directly or indirectly contaminated as a result of project activities to such an extent that it does not meet the applicable discharge standards; and where contaminants may include suspended or dissolved construction material, sewage, litter, eroded soil, etc;

"Clean" water – means water that has either not been contaminated directly / indirectly as a result of project activities; or that has been treated to a quality that meets the applicable discharge standards.

| &

1. Ensure that the ultimate flow from the development does not result in any negative impacts on downstream properties or watercourses and must therefore ensure that stormwater is managed within the overall site as effectively as possible
2. Design, implement and maintain all required stormwater control and mitigation measures so as to comply with applicable design standards thereby ensuring the safety of the shed as well as conserving the surrounding environment.

#

3. Maintain and upgrade the existing permanent stormwater system for the Locomotive Testing shed.

|

4. Prohibit stormwater pollution; and implement appropriate measures to prevent stormwater pollution.
5. Keep the stormwater system separate from the sewage/effluent system

and any other waste water (i.e. keep clean and dirty water separate).

6. Provide for effective containment of contaminated stormwater in order to render it "clean" for discharge purposes.

7. Inspect and maintain all the storm water management system (drainage structures, silt / debris / oil traps (if any), etc) to retain it cleared of organic and inorganic debris in order to prevent storm water contamination. **[Regularly]**

8. Dispose of any hazardous substances cleared from stormwater systems, e.g. oils/greases/chemicals from traps (if any) in accordance with the appropriate hazardous substances and waste management procedures.

8.4.10 Wastewater Management

1. Remove (do not leave in-situ) all polluted water, including contaminated stormwater, immediately from an area or system where such polluted water could spill or wash into the surrounding water resources or onto open ground; and transfer it to an impermeable tanker, sump or container for safekeeping before transportation for treatment and/or disposal to an appropriate wastewater treatment facility or alternatively to an appropriately licensed landfill site.

8.4.11 Air Quality

There will be no point source (stack) emissions into the air from the proposed facility. During the construction phase, fume emissions would result from vehicles transporting construction material, machinery, hydraulic hammers, generators, etc. The emissions will however have short term impacts on the immediate surrounding areas and thus the authorisation of such emissions will not be required. Dust may be generated as the result of exposed soil and cement dust. The following typical mitigation measures will reduce the significance level of potential air quality impacts:

1. Develop, implement and apply mitigation measures to effectively suppress airborne dust at site and on all dirt roads used, e.g.:
   - Minimise the surface area of exposed soil and fine construction materials to wind erosion
   - Damp / wet down trafficked areas with freshwater, and where appropriate, apply suitable additives to reduce the application frequency and use of fresh water
   - Implement and enforce appropriate speed limits on roads
   - Make use of cloth or brush barrier fences (where appropriate)

- Cover dumps with plastic sheeting (except for topsoil stockpiles)
- Undertake regular audits to monitor any significant dust emissions.

{Method Statement}

&

2. Develop, implement and maintain mitigation measures for fume and smoke emissions; including but not limited to the following:
   - Maintain vehicles and other driven machinery regularly to ensure that no smoke is emitted from exhausts
   - Prevent any uncontrolled fires
   - Prohibit burning of wastes/refuse.

{Method Statement} / {SOP}

8.4.12 Noise

Noise from site activities is considered of low significance considering the proposed project will be within an existing industrial area, it will fit into the surrounding noises not impacting on residential or other sensitive areas. Construction noise will result from the movement of construction vehicle trafficking, generators, hydraulic/pressure hammers and winches, hammering of steel structures into position and other typical construction activities. Adjacent industries and businesses may potentially be impacted by construction noise, particularly at offices. However the noise associated with construction activities will be of short term, localised and will only last during the construction activities/phase of the project.

During the operation phase, operating noise will result from inter alia the following:

- Noise associated with maintenance operations and equipment
- Labourer voices

It is considered unlikely that these noises would exceed the current background noises. Noise mitigation would be in the form of normal equipment maintenance.

# #

1. Restrict very noisy construction activities, e.g. breaking up concrete hardstanding with pressure hammers to daytime, if feasible; and if not, obtain authorisation from the local authority for alternative arrangements
2. Refrain from operations during the night as sound may travel to residential areas and communities.

8.4.13 Site Access Control, Safety and Security

Applicant (Transnet)	Contractor	ECO / Auditor	Specialist		Planning & Design	Construction	Operation	Decommissioning
				1. Confirm the availability of any required support for site control from the relevant police and emergency services.				
				2. Declare and retain the Locomotive Testing Facility site and associated infrastructure and equipment off-limits to the public.				
#	#			3. Inform all staff of the hazards on the site and provide suitable training on how to protect themselves, others and the environment from such hazards; how to react and what to do in an emergency.				
#	#			4. Clearly communicate access policy for the properties to the staff and public, using notice boards on access gates and by directly communicating with the nearby communities (refer to **Section 8.2.1**).				
#	#			5. Provide and declare the access gateway(s) and what use they are intended for; control access at all these gateways; prohibit access via any other places; and prohibit use of any deviation from approved access roads or transportation routes unless written approval has been received therefore from the Project Manager / Facility Operations Manager.				
#	#			6. Raise awareness and clearly communicate any public safety risk to the public, using appropriate safety and precaution signage erected in applicable areas, radio broadcasts, notice boards and/or by directly communicating with the nearby communities (meetings, flyers).				
				7. Ensure compliance with the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), and specifically for the purposes of this EMP, such sections and regulations that have environmental relevance, e.g. handling of flammable liquids, asbestos management (if applicable), etc.				
				8. Ensure that the site and all associated operations are and remain in compliance with all National Health and Safety Standards and other relevant international, national, regional and local regulations.				
#				9. Issue identity tags complete with a photograph to all individuals that are to be present on site for more than 3 consecutive calendar days.				
#				10. Require visitors to sign a register at the security checkpoint; issue all visitors with a visitor's permit; and require an employee responsible for receiving / accompanying the visitor to endorse this permit before the visitor leaves the security area.				
#	#			11. Maintain all vehicles used on site in a roadworthy and leak free condition and maintain all equipment in a safe working condition and such that any accidental emissions, spills, explosions, etc. are avoided.				
#	#			12. Allow only qualified/ trained personnel to operate equipment and vehicles.				

13. Prohibit anyone from driving or operating construction / operation / demolition vehicles, or any other vehicle, without being in possession of a valid driver's license; and without obeying the applicable speed limits and road safety regulations that apply on or off site.
14. Prohibit the transportation of persons on the back of vehicles.
15. Prohibit driving under the influence of alcohol or narcotic substances.

8.4.14 Emergency Preparedness and Response

1. Develop and/or implement an Emergency Preparedness Plan consisting of appropriate emergency procedures and information prior to commencing with any work that may potentially result in an emergency; which includes but is not limited to fires, spills, and contamination of the Umhlatuzana Canal, accidents to employees and damage to services. (Applicable existing COPs and SOPs may be used.). Based on comments received from Department of Water Affairs (DWA) on 24 June 2013, the Emergency Preparedness Plan should include the following actions in case of a spill:
   - Stop the source of the spill
   - Contain the spill
   - All significant spills must be reported to DWA and other relevant authorities
   - Remove the spilled product for treatment or authorized disposal
   - Determine if there is any soil, groundwater or other environmental impact
   - If necessary, remedial action must be taken in consultation with DWA
   - Incident must be documented.

   [Ongoing and where necessary], **{Method Statement} / {SOP}**
2. Include contact details of all relevant emergency services and response teams and neighbouring land owners/ users/ managers in the Emergency Preparedness Plan; keep and display such contact details in appropriate places; and ensure that these are regularly checked und updated if necessary.
3. Appoint an on-site emergency response team, train key staff in emergency response and make all staff aware of the emergency procedures. **[Ongoing]**
4. Work closely with the local emergency services departments in order to ensure that required services are sufficient in the area; for providing support in case of site emergencies; and for assistance with evacuation

procedures once the site is operational.

5. Maintain a register of and compile reports on all incidents, accidents, 'near miss', etc., which includes the action taken after the event has occurred; and inform at least the Project Manager as well as the ECO of the event.
6. Notify any relevant authority immediately and keep detailed record of such notifications, should any serious incident occur, including e.g.:
   - The local Emergency Services Department for all incidents that may affect the local community and road users
   - The Department of Environmental Affairs for incidents which likely has a detrimental effect on the environment
   - The Department of Labour for reportable incidents as defined in the Occupation Health and Safety Act (Act No 85 of 1993)
   - The relevant roads authority, for accidents on public roads
   - The Department of Water Affairs for any emergencies that affect water resources.

8.4.15 Fire Prevention and Response

1. Responsible parties will be liable for any damage caused by fires resulting from their operation, negligence or lack of protection of the site from fires.
2. Include a fire emergency preparedness plan for fighting accidental fires in the Emergency Preparedness Plan (Applicable existing COPs and SOPs may also be used) (refer to **Section 8.4.14**).
3. Fire-fighting equipment for each construction / operational / demolition team and/or area must be readily available on site; bearing in mind that these should be approved by the local Fire Prevention Officer, ECO, Safety and/or Health Officer.
4. Avail and maintain appropriate fire-extinguishers on all vehicles carrying flammable materials.
5. Keep a register and inspection log of all fire fighting equipment; and inspect and check fire fighting equipment regularly and record such inspection on the inspection log that is retained on-site. **{Method Statement} / {SOP}**
6. Prevent accidental fires through proper sensitisation of staff towards the associated risks, dangers and damage of property.
7. Inform and/or involve neighbouring land owners/ users/ managers should there be a risk of a fire spreading to their site.

8.5 Specific Construction Activities

Applicant (Transnet) | Contractor | ECO / Auditor | Specialist
Environmental Specifications
Planning & Design | Construction | Operation | Decommissioning

8.5.1 Site Clearance

1. Restrict the area to be cleared to a minimum, and clear areas sequentially as needed; to benefit from the stormwater absorption, erosion protection and dust control properties of the vegetation cover. **{Method Statement}**
2. Demarcate all areas to be cleared and those not to be cleared (e.g. “No-go” areas) clearly and effectively, prior to clearing.
3. Designate stockpile areas for various materials (topsoil, subsoil, and building rubble/excess concrete that can be crushed and re-used as fill material) and communicate these to the contractors.

8.5.2 Soil Stockpiling

1. Restrict the removal of topsoil to areas where excavation or preparation for coverage by hardstanding are imminent, and there is a high risk of imminent topsoil contamination (e.g. areas of heavy traffic, areas in proximity of cement batching facilities, etc.).
2. Remove the topsoil material (minimum 300 mm) from any areas to be excavated, covered by hardstanding or from which the topsoil needs to be stripped for topsoil protection.
3. Store the topsoil separately (from general fill, rubble, etc.), effectively and securely for later use in rehabilitation in stockpiles in a manner that would limit erosion and dust. **{Method Statement}**
4. Locate all soil stockpiles (topsoil and fill) as follows:
   - Sufficiently away from seepage zones, flood lines, water courses and other ecological sensitive area
   - Preferably in areas that were already disturbed before the project

activities commenced on site

- In areas as indicated in the relevant approved and latest Site Layout Plan.

5. Plan for and adhere to a minimum of topsoil handling (preferably handle stockpile only during initial stockpiling and for eventual removal for rehabilitation purposes).
6. Secure and treat soil stockpiles to reduce dust generation and erosion effectively.
7. Reseed topsoil stockpiles that are to be kept for extended periods, to prevent excessive dust or erosion.
8. Remove all excess fill material from an area or the site, once construction therein has been completed.

8.5.3 Concrete Mixing, Batching and Wash Areas

1. Avoid mixing concrete directly on the ground, or near water resources.
2. Consider making use of ready-mix concrete supply instead of installing an on-site concrete batch plant, if at all feasible.
3. Clean up any concrete spilled on public roads immediately.
4. Provide a bunded and controlled cleaning and/or washing area equipped with a wastewater catch pit to wash plant and equipment used for cement (including concrete shoots from ready mix trucks).
5. Carry out the cleaning and/or washing of concrete transporters and delivery trucks, concrete mixers and other concrete equipment in the cleaning facilities only; and refrain from undertaking any such cleaning elsewhere; with the cleaning zones/facilities designed to contain all concrete waste and wash water effectively. **{Method Statement}**
6. Locate concrete batching activity / facilities in an area of low environmental sensitivity and indicate such location on the Site Layout Plan, should an on-site concrete batch plant be necessary.
7. Implement special precautions in terms of bunding; waste water capturing and treatment; and precautions against wind-blown cement; should an on-site concrete batch plant be necessary. **{Method Statement}**
8. Store bulk cement, bags of cement and empty cement bags in an area or a facility protected from the weather and in a way that minimises cement dust being wind blown into the environment.
9. Clean up any accidental concrete spills that occur outside the

designated concrete batching area immediately.

10. Rehabilitate the ground of the batching plant area and any area where concrete has been spilled to render it uncontaminated, upon completion of works.

8.5.4 Trenching for Cable and Pipeline Lying

1. Ensure that all servitudes in the area to be trenched is known and that any neighbouring servitudes are not affected or impacted without the necessary approvals from the owners/operators of the servitudes.
2. Mark open trenches with danger tape.
3. Provide sloped access points for people and animals to escape from being trapped in the trenches.

8.5.5 Refuelling, Servicing and Cleaning of Vehicles, Plant, Equipment and Machines

1. Refuel vehicle or machinery only at a purpose-designed and designated bunded refuelling area on site or off-site; unless in cases of an on-site emergency repairs or for refuelling stationary equipment (e.g. generator) in which case drip tray are to be used. **{Method Statement}**
2. Place drip-trays that are suitably and practically designed to effectively contain spills (i.e. sufficient capacity and freeboard), and where necessary filled with appropriate absorbent material, under all parked vehicles and machines that are or may leak oil or fuel, maintained daily and regularly disposed of in an appropriate manner; unless such a vehicle is parked in an area provided with hardstanding that drains towards an oil-water separator to handle the amount of water expected to fall within the hard standing area.
3. Carry out routine vehicle maintenance and washing necessary at a maintenance workshop instead of at the site or construction/demolition camps to avoid on-site spills and leakages.
4. Keep all mechanical equipment used in project activities clean and free of oil, petrol, and diesel leaks.
5. Prohibit washing of any mechanical plant or equipment on the Facility site, unless in an area specifically equipped for such a purpose in a way that would prevent stormwater and groundwater contamination.
6. Undertake all vehicle maintenance (unless where on-site emergency repairs are necessary) in a designated vehicle maintenance area/ workshop, which is provided with a roof, appropriate spill containment

(bunding), waste water treatment, fire protection, etc. **{Method Statement}**

7. Undertake stationary plant and vehicle emergency repairs in-situ only if there is good reason why these are impractical to carry out in a workshop; and if doing so, implement and adhere to appropriate spill prevention and containment measures (e.g. drain fuel / oil into drums, make use of drip-trays, cover the ground for part and tool lay-down areas with tarpaulins, construct temporary containment berms etc.). **{Method Statement}**
8. Ensure skirts are places around static plant (e.g. generators) to prevent rainwater build-up that could result in overflow of contaminated water.

8.5.6 Spill Clean-up and Disposal

1. Make every effort to avoid spills of hazardous materials.
2. Develop and implement a Spill Clean-up Procedure that takes staff safety and environmental protection appropriately into consideration. **{Method Statement} / {SOP}**
3. Provide stock and maintain appropriate complete emergency spill kits at locations close to where hazardous substance are stored or used and ensure full availability at all times. **{Method Statement} / {SOP}**
4. Train all relevant staff members to use the emergency spill kit and on the procedures to deal with spills of hazardous substances such as e.g. oils, diesel, petrol, paints, pesticides, etc.
5. Contain and clean-up any spills as soon as possible after the incident and thereafter remediate the affected area effectively and to the satisfaction of the ECO; including spills on unbunded hard surfaces, stormwater drains, roads, laydown areas, etc..
6. Report spills of hazardous substances immediately to the ECO and maintain a register for spills and all incidents involving hazardous materials.
7. Dispose of spilled material recovered from bunded areas by either appropriate re-use, recycling or disposal to a suitably licensed disposal facility.
8. Remove contaminated soil or yard stone immediately (do not leave in-situ) and disposed of this soil at a suitably licensed waste disposal site; or alternatively treat contaminated soil on site but ex-situ through bioremediation on an impermeable bunded area, provided such a method proof to be effective and prevents further or ongoing environmental contamination.

8.5.7 'Non-hazardous' Spoil Disposal and Dumps

Note: For the purposes of this EMP the following definition applies:

Soil – means excavated natural soil and crushed rock which is uncontaminated with any 'man-made' material such as concrete, cement, packaging, oils, fuel, etc.

1. Dispose of 'non-hazardous' spoil at a site approved for such disposal, e.g. infill area identified by the Municipality. **{Method Statement}**
2. Minimise the visual impact of temporary spoil dumps
   - Provide for side slopes to ideally be 1:3 but not steeper than 1:2, taking the direction of the prevailing wind into consideration in order to reduce dust and fine sand from blowing into sensitive environmental features (e.g. canal) and work areas

8.5.8 Demolition of Structures and Buildings

3. Obtain all relevant approvals and clearances prior to demolition (from Transnet).
4. Ensure that all hazardous substances (e.g. oils, greases, asbestos, mercury containing light bulbs, etc.), are safely removed and disposed of in accordance with legislative requirements to an appropriate facility for safe storage, treatment and/or disposal.
5. Remove any re-usable / recyclable material for re-use to an appropriately licensed recycler / recycling facility, where feasible.
6. Dispose of any rubble to an appropriately licensed disposal facility (e.g. building rubble site, recycler).

9 CONCLUSION

This Environmental Management Programme (EMP) for the proposed construction of the Transnet Locomotive Testing Shed builds on the environmental processes that have preceded it, namely the Basic Assessment Report. The EMP defines roles and responsibilities; and provides procedures and specification relevant to minimisation and mitigation of environmental impacts, for the planning, design, construction, operation and decommissioning phases of the proposed project.

It is expected that the relevant Transnet Project Engineer 'takes ownership' of the EMP and facilitates the full implementation of and compliance with the EMP. It is recommended that the complete EMP be incorporated and form part of the construction tender documentation and process. This would allow all potential bidders to consider the cost for all the required specifications and mitigation measures that are applicable to the construction phase with reasonable accuracy. It would also ensure that the document receives the necessary buy-in that it requires right from the outset of any construction work.

The EMP is currently presented in a draft format, as it may require amendment subsequent to Environmental Authorisation of the proposed project.

DOCUMENT CONTROL SHEET
(FORM IP180/B)

CLIENT	:	Transnet Engineering
PROJECT NAME	:	Transnet Locomotive Testing Shed **PROJECT No. :** J33001
TITLE OF DOCUMENT	:	Transnet Locomotive Testing Shed Environmental Management Programme
ELECTRONIC LOCATION	:	**P:\J33001 – Transnet Locomotive Testing Shed\REPORTS\EMP**

	Approved By	Reviewed By	Prepared By
DRAFT1 for Public Review	NAME **Urishanie Govender**	NAME **Elisabeth Nortje**	NAME **Katherine de Jong**
DATE **May 2013**	SIGNATURE	SIGNATURE	SIGNATURE

	Approved By	Reviewed By	Prepared By
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DATE **June 2013**	SIGNATURE	SIGNATURE	SIGNATURE

	Approved By	Reviewed By	Prepared By
REVISION	NAME	NAME	NAME
DATE	SIGNATURE	SIGNATURE	SIGNATURE

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Annexure A

List of Important Contacts and Emergency Numbers

Department	Contact person	Contact No.	Email	Postal
Department of Environmental Affairs– (DEA)				
Transnet Project Engineer				
Environmental Manager				
Transport Authority				
Department of Water Affairs				
Engineering Consultant				
Project Manager (PM)				
Environmental Consultant / Environmental Control Officer				
Contractor				
Sub-contractor				
Public and Authorities Acting on Their Behalf				
Drizit - Environmental - Sales of absorbant products				
Drizit - 24-Hour Emergency Number for incidents				

Annexure B

Inspection Sheet and Report Templates

Project Start Up and Site Inspection Sheet

PROJECT START UP INSPECTION SHEET

Project: **Date**

Contract No.: **Completed by:**

Contractor:

ES	ENVIRONMENTAL ASPECT	YES NO N/A	COMMENTS	ACTION
PLANNING				
ESTABLISHMENT				
CLEARANCE				

Routine Site Inspection Sheet

ROUTINE SITE INSPECTION SHEET

Project: **Date**

Contract No.: **Completed by:**

Contractor:

ES	ENVIRONMENTAL ASPECT	YES NO N/A	COMMENTS	ACTION
HOUSEKEEPING				
CONSTRUCTION ACTIVITIES				
REINSTATEMENT AND REHABILITATION				

Site Decommissioning Inspection Sheet

Project: **Date**

Contract No.: **Completed by:**

Contractor:

ES	ENVIRONMENTAL ASPECT	YES NO N/A	COMMENTS	ACTION
DECOMMISSIONING OF THE SITE				

Site Inspection Report Structure

Purpose of the Site Inspection Report

The purpose of the Site Inspection Report is to describe the results of the site inspections undertaken by the Environmental Control Officer (ECO) or delegated responsible person so that the level of compliance with the Environmental Management Plan (EMP) can be monitored throughout the contract.

In particular, it will be expected to summarise the following:

- The key results
- Trends observed
- Key issues observed
- Problems encountered
- Actions required and response taken or to be taken
- Recommendations.

The Site Inspection Report should conclude with a commentary on the overall performance of the Contractor in terms of meeting the requirements of individual/groups of Environmental Specifications and/or EMP as a whole.

Preparation of the Site Inspection Reports

Site Inspection Reports are expected to be prepared regularly throughout a given construction contract, including (but not limited to) the following:

- Prior to the handover of the site to the Contractor
- At regular stages throughout the construction works, and particularly with the commencement of particularly significant activities
- At the decommissioning of the site and prior to the handover of the site to the Employer/Operator.

Recommended Structure for the Site Inspection Reports

The following report structure is suggested for the Site Inspection Report:

Introduction

By way of setting the context for the Site Inspection Report, this section should outline the following:

- The need for the Site Inspections, and reporting.
- Purpose of the Site Inspection Report.
- The scope of coverage of the Site Inspection Report.

Environmental Management Requirements	This section should summarise the environmental requirements for the contract and for the construction works, and against which environmental performance is assessed.
Methodology	This should describe the activities undertaken during the particular site inspection, such as: • A site walkabout with the Project Manager (PM). • A review of documents and records, such as complaints records and/or incidents reports maintained by the Contractor and/or ECO. • Consultations with pertinent parties on site.
Findings of the Site Inspection	This should contain reference to the following: • A commentary on the level of compliance with key aspects of the Environmental Specifications, as listed in the checklist(s). • Details of issues, infringements, problems and non-compliances encountered. • Recommendations on actions to be undertaken to address any issues, infringements and/or non-compliances.
Conclusions	This should include an overall statement on the level of compliance observed during the site inspection.
Annexures	Annexures should be used to store supporting information to the main document, such as: • Photographs. • A quick reference, summary table of issues of concern and the necessary corrective measures required to address these issues.

Annexure C

List of Incidents and Associated Penalties

TYPICAL INCIDENTS INCURRING PENALTIES	VALUE
Failure to submit Method Statements timeously.	R5,000.00
Failure to secure construction site from public access.	R5,000.00
Failure to demarcate working servitudes and/or maintain demarcation tape.	R1,000.00
Failure to stockpile topsoil correctly.	R500.00
Failure to stockpile materials in designated areas.	R500.00
Pollution of water bodies – including increased suspended solid loads.	R500.00
Discharging effluent and/or stormwater onto the ground or into surface water and wetlands	R 500.00
Failure to provide adequate sanitation, waste disposal facilities or services.	R1,000.00
Failure to demarcate construction area boundaries before commencing construction clearance and other activities	R1,000.00
Insufficient education of employees regarding environmental matters and site housekeeping practices	R500.00
Use of soil in an unspecified manner	R500.00
Stockpile of soils and materials outside demarcated areas	R1,000.00
Inappropriate mixing of cement/concrete and poor management of concrete slurry	R1,000.00
Untidiness and litter at camp.	R200.00
Unauthorised removal of indigenous trees, medicinal or other plants.	R1,000.00
Damaging/killing or poaching animals/birds.	R 1,500.00
Failure to erect temporary fences as required.	R1,000.00
Failure to reinstate disturbed areas within the specified timeframe.	R1,000.00
Fire – costs of runaway fires will be borne by the Contractor, should he/she be proven responsible for such fires.	R5,000.00
Failure to provide equipment for emergency situations	R1,000.00
Defacing, painting or damaging natural or heritage features (where applicable)	R1,000.00
Damaging cultural, historical and/or archaeological sites of importance	R5,000.00
Failure to maintain basic safety measures on site.	R1,000.00
Failure to obey site protection measures specified by the Project Manager.	R1,000.00
Failure to carry out required community liaison, damage to property etc, without prior negotiation and/or compensation and other social infringements.	R500.00
Persistent and un-repaired oil leaks from machinery. The use of inappropriate methods of refuelling.	R500.00
Failure to provide drip trays and/or empty them frequently.	R500.00
Inappropriate use of bins and poor waste management on site.	R200.00

TYPICAL INCIDENTS INCURRING PENALTIES	VALUE
Inappropriate off-site disposal of waste from site.	R1,000.00
Deliberate lighting of illegal fires on site.	R500.00
The eating of meals on site outside the defined eating area. Individual not making use of the site ablution facilities.	R100.00
Dust or excess noise on or emanating from the site.	R200.00
Inappropriate use of watercourses and water bodies – such as for unapproved water abstraction, washing of vehicles, wastewater disposal and use by employees for washing.	R500.00
Any person, vehicle, item of plant/equipment/mashine, or anything related to the Contractor's operations causing a public nuisance.	R500.00
Improper use of plant or equipment.	R500.00
Construction vehicles not adhering to speed limits	R250.00
Failure to maintain a register of incidents on site.	R1,000.00
Failure to remove all temporary features and leftovers from the construction site and works areas upon completion of the works.	R20,000.00
Any contravention with a Method Statement.	R5,000.00
Repeated contravention of the specifications or failure to comply with instructions	R5,000.00

Annexure D

List of Construction Activities that Required Method Statements

Construction Activities that will require Method Statements

ACTIVITY	SPECIFICS
Access Routes and Roads	• Upgrading and construction of access routes • Rehabilitation of temporary access routes • Location of proposed access routes
Blasting	Details of all methods and logistics associated with blasting **if required**
Excavation	Method for all excavations, including minimisation of environmental impact such as siltation and sedimentation of Rivers and wetlands
Borrow Pit	Establishment and use of any new borrow pit where applicable.
Bunding	Method for the bunding of static plant
Cement/Concrete Batching	Location, layout and preparation of cement/ concrete batching facilities including the methods employed for the mixing of concrete including the management of runoff water from such areas
Contaminated Water	Contaminated water management plan, including the containment of runoff and polluted water
Drilling and Jack Hammering	• Method of drill coring with water or coolant lubricants • Methods to prevent pollution during drilling operations
Dust	• Dust control plan (methods)
Earthwork, Erosion Control and Stormwater management	• Method for the control of erosion during bulk earthworks operations • Method of erosion control of spoil materials • Method of undertaking earthworks, including hand excavation and spoil management • Construction site drainage design and management • Construction site stormwater management plan to be approved by the Municipality Water Services • Construction of earth and stormwater control berms or drainage ditches around campsite to contain dirty water
Emergency	• Emergency response plan approved by the Emergency Services Department • Emergency procedures must include but not be limited to electrical hazards, fires, spills, and contamination of ground and surface water, accidents to employees and damage to services
Environmental	Ensure that all site employees are aware of, and understand the contents and conditions of the EMP, the

ACTIVITY	SPECIFICS
induction training	key environmental issues and the consequences of non-compliance
Fire, Hazardous and Poisonous substances Management	• Handling and storage of hazardous waste in impermeable bunded areas with separate storage of incompatible substances • Construction and location of concrete platform / bund wall to accommodate hazardous substances • Emergency spillages procedures and compounds to be used • Emergency procedures for fire • Emergency remediation / clean-up procedures for spills or leaks of hazardous substances • Location of hazardous substance storage areas (outside 1:100 floodline) • Methods of the disposal of hazardous building materials, including asbestos, fibre claddings, refrigerants and coolants. • Methods of refuelling vehicles • Details of methods for fuel spills and clean up operations • Refuelling of construction vehicles in high flow areas • Hazardous substance management during site remediation prior to commencement of remediation and construction. • Site remediation as part of site preparation for construction, , to the satisfaction of the ECO and/or the Municipality Environmental Department..
Health and safety	• Compile a Construction Health and Safety Plan • Take all necessary precautions to effectively address any potential health and safety hazards • Display appropriate hazard warning signs conspicuously at all potential hazards that may affect public members
Rehabilitation	• Rehabilitation of disturbed areas and re-vegetation after construction is complete • Retaining walls and gabions • Method for construction and installation of retaining walls/gabion baskets.
Services Commissioning and Decommissioning	Method of commissioning the various service infrastructure to ensure minimisation of environmental health and safety risk
Site Camp Establishment	• Layout and preparation of the construction camp

ACTIVITY	SPECIFICS
	• Location, layout, preparation and operation of all wash areas, including vehicle wash, workshop washing and paint washing and clearing • Construction camps, equipment storage sites and ablution facilities serving the construction phase should be sited a reasonable distance away from the wetlands, outside of the 1:100 floodline • Location of storage areas for materials, equipment, plant and vehicles • Method of vegetation clearing • Installation of ablution facilities with chemical toilets prior to construction commencing (minimum of one toilet to 15 people)
Sources of materials	Details of materials imported to the site (where applicable)
Traffic	Any traffic diversions must be undertaken with approval of the Municipality Transport Authority and in accordance with relevant legislation.
Waste Control and Management	• Types of wastes generated • Classification of waste • Location of designated waste areas • On-site disposal facilities • Collection arrangements • Disposal procedures • Disposal site verification • Record keeping of waste consignment notes • Solid waste and sewerage collection and disposal procedures • Methods for the disposal of vegetation cuttings, tree trunks and/or building materials • Waste management plan to prevent soread of refuse within and beyond the site
Wastewater management	• Supply wastewater management system in compliance with legal requirements • Remove or divert sewerage and wastewater from camp-sites to approved treatment works.
Water abstraction	Water abstraction from water resources