
2018

**DRAFT ENVIRONMENTAL MANAGEMENT
PROGRAMME FOR THE PROPOSED UPGRADE OF
STORM WATER AND ENVIRONMENTAL SYSTEMS IN
THE PORT OF SALDANHA WITHIN THE SALDANHA
BAY LOCAL MUNICIPALITY, WESTERN CAPE
PROVINCE**

CLIENT REVIEW

JULY 2018





DOCUMENT CONTROL

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED UPGRADE OF STORM WATER AND ENVIRONMENTAL SYSTEMS IN THE PORT OF SALDANHA WITHIN THE SALDANHA BAY LOCAL MUNICIPALITY, WESTERN CAPE PROVINCE

Quality Control

Report:	Compiled By:	Peer Reviewed By:
Draft Environmental Management Programme	Masala Mahumela _____	Munyadziwa Rikhotso _____

TABLE OF CONTENTS

1	INTRODUCTION	9
2	DETAILS AND EXPERTISE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER	9
3	PROJECT DESCRIPTION	11
3.1	DESCRIPTION OF LOCALITY	12
4	PURPOSE AND SCOPE OF THE EMPR.....	14
5	GENERAL ENVIRONMENTAL GUIDELINES FOR THE CONSTRUCTION PHASE.....	14
6	APPLICABLE LEGISLATION.....	15
6.1	PROVINCIAL AND MUNICIPAL BY LAWS	18
6.2	STANDARD TRANSNET POLICIES TO BE COMPLIED WITH.....	19
6.3	METHOD STATEMENTS FOR THE ACTIVITIES TO BE CARRIED OUT	19
7	ROLES AND RESPONSIBILITIES OF THE PROJECT TEAM	19
7.1	ENVIRONMENTAL CONTROL OFFICER (ECO)	19
7.2	TRANSNET ENVIRONMENTAL OFFICER.....	20
7.3	CONTRACTOR	20
7.4	COMPETENT AUTHORITY	21
8	DESCRIPTION OF MITIGATION MEASURES	21
9	PRE- CONSTRUCTION MANAGEMENT PROGRAMME	22
9.1	COMMISSIONING OF TENDER.....	22
10	CONSTRUCTION MANAGEMENT PROGRAMME	23
10.1	SITE ESTABLISHMENT	23
10.1.1	Site Plan:.....	23
10.1.2	Site Camps:	24
10.1.3	Vegetation clearing:	25
10.1.4	Water for human consumption:	25
10.1.5	Sewage Treatment:.....	25
10.2	SENSITIVE ECOLOGY	26
10.3	MATERIALS HANDLING, USE AND STORAGE	28
10.3.1	Safety:.....	28
10.3.2	Hazardous Material Storage:	29
10.3.3	Fuels and Gas Storage:	29

10.4	EMPR TRAINING	30
10.5	WATER SUPPLY.....	31
10.6	VEHICULAR ACCESS AND MOVEMENT OF CONSTRUCTION VEHICLES.....	32
10.7	MOVEMENT OF CONSTRUCTION PERSONNEL AND EQUIPMENT	33
10.8	PROTECTION OF MARINE AND TERRESTRIAL SEDIMENTS	35
10.9	PROTECTION OF FAUNA AND AVIFAUNA.....	37
10.10	HERITAGE AND/OR ARCHAEOLOGICAL SITES.....	39
10.11	SERVICING AND RE-FUELLING OF CONSTRUCTION EQUIPMENT	42
10.12	WASTE MANAGEMENT	43
10.12.1	SOLID WASTE MANAGEMENT	44
10.12.2	LIQUID WASTE MANAGEMENT.....	46
10.12.3	HAZARDOUS SUBSTANCES MANAGEMENT.....	47
10.13	TERRESTRIAL BIODIVERSITY MANAGEMENT	48
10.14	HAZARDOUS MATERIALS.....	50
10.15	SURFACE AND GROUND WATER MANAGEMENT	52
10.16	SENSITIVE AREAS (WATER COURSES AND BUFFERS)	55
10.17	OIL SPILL MANAGEMENT	57
10.18	STORM WATER MANAGEMENT.....	58
10.19	FIRE	60
10.20	AIR POLLUTION	61
10.21	NOISE AND VIBRATION IMPACT.....	62
10.22	VISUAL IMPACT	63
10.23	TRAFFIC IMPACT.....	64
10.24	EXCAVATION, BACKFILLING AND TRENCHING	65
10.25	EROSION AND CONTROL.....	66
10.26	USE OF CEMENT AND CONCRETE	68
10.27	SITE CLEAN-UP AND REHABILITATION	69
10.28	INFRASTRUCTURE	71
10.29	MONITORING OF EMPR COMPLIANCE	72
10.30	DOCUMENT CONTROL	73
11	OPERATION MANAGEMENT PROGRAMME	75
	THIS SECTION PROVIDES THE DESCRIPTION OF THE POSSIBLE IMPACTS AND ITS MITIGATION MEASURES ASSOCIATED WITH THE OPERATIONAL PHASE.	75
11.1.1	Waste Management.....	75
11.1.2	Health and Safety	75
11.1.3	Storm water systems and retention ponds.....	75
11.1.4	Waste water treatment facility.....	76

11.1.5	Air quality	78
12	GENERIC CONDITIONS	79
12.1	SITE DOCUMENTATION/MONITORING.....	79
12.2	AUDITS	79
12.3	ACCESS TO DOCUMENTS	80
12.4	SOCIO-CULTURAL ISSUES.....	80

LIST OF TABLES

Table 1: Details of the EAP 10
Table 2: Legislation pertaining to the proposed project..... 15

LIST OF FIGURES

Figure 1: Locality Map displaying the Port layout..... 12
Figure 2: Zoomed in locality map depicting the proposed project site..... 13

LIST OF ACRONYMS

APA	Agricultural Pests Act, 1983 (Act No. 36 of 1983)
APA	Animals Protection Act, 1962 (Act No. 71 of 1962)
APPA	Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965)
CARA	Conservation of Agricultural Resources Act, 1983 (Act No 43 of 1983)
EO	Environmental Officer
DAFF	Department of Agriculture, Fisheries and Forestry
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EA	Environmental Authorisation
ECA	Environment Conservation Act, 1989 (Act No. 73 of 1989)
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
FA	Fencing Act, 1963 (Act No. 31 of 1963)
HSA	Hazardous Substance Act, 1973 (Act 15 of 1973)
HIA	Heritage Impact Assessment
KM	Kilometres
NEMA	National Environmental Management Act, 1998 (Act 107 of 1998)
NEMWA	National Environmental Management Waste Act, 2008 (Act 36 of 2008)
NEMAQA	National Environmental Air Quality Act, 2004 (Act 39 of 2004)
NEMBA	National Environmental Management Biodiversity Act, 2004 (Act 10 of 2004)
NHRA	National Heritage Resources Act, 1999 (Act 25 of 1999)
NLTA	National Land Transport Act, 2009 (Act 5 of 2009)
NWA	National Water Act, 1998 (Act 36 of 1998)
OHSA	Occupational Health and Safety Act, 1993 (Act of 85 of 1993)

SACNASP	South African Council of Natural Scientist Profession
SAHRA	South African Heritage Resources Agency
SES	Standard Environmental Specification
TLB	Tractor Loader Backhoe
WULA	Water Use Licence Application

1 INTRODUCTION

This Environmental Management Programme (EMPr) has been compiled for: **the proposed upgrade of storm water and environmental systems in the Port of Saldanha within Saldanha Bay Local Municipality in the Western Cape Province**. The proposed upgrades can have major impacts on the environment, as such, an environmental authorization needs to be obtained prior to commencement of the activity/ies in accordance with the requirements of the National Environmental Management Act, 1998 (Act 107 of 1998) [NEMA] and the Environmental Impact Assessment (EIA) Regulations of 2014 as amended. It is therefore imperative that precautions are taken to ensure that environmental degradation is minimized while the upgrade activities are being undertaken. This will take a concerted effort from the project team and proper planning is of the utmost importance.

Consequently, Nsovo Environmental Consulting (hereafter referred to as Nsovo) has been appointed by Transnet SOC Limited (hereafter referred to as Transnet) to undertake a Basic Assessment (BA) process for the proposed upgrade of storm water and environmental systems in the Port of Saldanha (the Port). As part of the BA process an EMPr must be prepared as a guideline for the mitigation and management measures to be implemented during the planning, construction and operational phases of the project.

This EMPr is applicable to all the employees and contractors of Transnet working on the development. The document will be adhered to and updated as relevant; it is therefore a living document that guides the day to day activities throughout the lifecycle of the development. Any changes to the EMPr must be undertaken in accordance with the requirements of the NEMA EIA Regulations and any other legislation relevant at the time. This EMPr has been developed to ensure compliance with the requirements of the National legislative - and other relevant regulatory requirements.

2 DETAILS AND EXPERTISE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

Nsovo has been appointed by Transnet as the independent Environmental Assessment Practitioner (EAP) for the proposed project and meets the general requirements as stipulated in Regulation 13 (3) of the NEMA EIA 2014 Regulations as amended. Nsovo therefore:

- Is independent and Objective;
- Has expertise in conducting EIA's;
- Takes into account all relevant factors relating to the application; and
- Provides full disclosure to the applicant and the relevant environmental authority.

Table 1: Details of the EAP

Name of Company	Nsovo Environmental Consulting
Person Responsible	Masala Mahumela
Professional Registration	South African Council for Natural Scientific Professions (SACNASP)
Postal Address	P/Bag x29 Postnet Suite 697 Gallo Manor 2052
Telephone Number	011 041 3689
Fax Number	086 602 8821
Email	masala.mahumela@nsovo.co.za
Qualifications & Experience	B.Sc. Honours Environmental Management 10 years of experience
Project Related Expertise	In terms of project related expertise ,the EAP has undertaken the following projects: <ul style="list-style-type: none"> • EIA for the proposed Shongweni substation and Hector - Shongweni 400kV powerline in Kwazulu Natal Province. • EIA for the proposed Inyaninga substation and Inyaninga – Mbewu 400kV powerline in Kwazulu Natal Province. • EIA for the proposed Tubatse strengthening phase 1 – Senakangwedi B integration within the jurisdiction of Greater Tubatse Local Municipality in Limpopo Province. • EMPr, WULA and EA amendment for the proposed Juno Gromis 400kV power line • Basic Assessment for the proposed Decommissioning and Demolition of Verwoedberg Substation and 275kV power.

	Basic Assessment for Bloemendal Substation and loop in and out lines.).
--	---

Curriculum Vitae and qualifications are attached as **Appendix B**.

3 PROJECT DESCRIPTION

The Port is the largest iron ore handling port in South Africa. Iron ore is transported to the Port by rail from Sishen in the Northern Cape where it is stockpiled prior to loading onto bulk iron ore carriers for export purposes. The Port also serves base metal mines, an adjacent heavy minerals smelter as well as the crude oil storage facility near the Port.

The Port was constructed in the 1970's to facilitate the export of iron ore. Bulk crude oil and break-bulk terminals were subsequently added to the facilities in the Port. In the early 2000's the first phase of expansion of the iron ore facility was undertaken, which included expansion of the stockyard area and provision of a second tippler, two additional stacker reclaimers, and the upgrading of the ship loaders.

Various storm water management infrastructures have been constructed within the Port. The Storm Water Master Plan (SWMP) of 2013 for the Port revealed that the existing storm water management infrastructure is inadequate. As such if the infrastructure is not upgraded and/or replaced, uncontrolled discharge into the bay and municipal system will be imminent. Transnet therefore proposes to upgrade the storm water and environmental systems within the Port to accommodate 1:50 year flood conditions. The proposed development entails the upgrade of the existing storm water infrastructure in both operational and non-operational areas of the Port in order to improve the storm water infrastructure systems.

The primary objective is to implement the recommendations detailed in the Storm Water Master Plan dated 2013 for the Port and ensure that it is aligned and fully complies with the requirements of the South African Legislation.

The following scope of work will take place within the areas mentioned above:

- The development of two new storm water retention/evaporation ponds;
- Introduction of infiltration channels where necessary;
- The resizing and reshaping of thirteen (13) existing storm water retention ponds;
- The development of a waste water treatment facility (below 2000m³ in capacity);
- Caisson collection reservoir and pumping system;
- The upgrade of storm water management infrastructure;
- The cleaning of existing storm water management systems.

3.1 DESCRIPTION OF LOCALITY

The proposed development will be located in Wards 5 and 6 within the jurisdiction of Saldanha Bay Local Municipality within the West Coast District Municipality. The project site is zoned industrial and is used as an iron ore export facility by Transnet. Figures 1 and 2 below depict the locality of the proposed development.

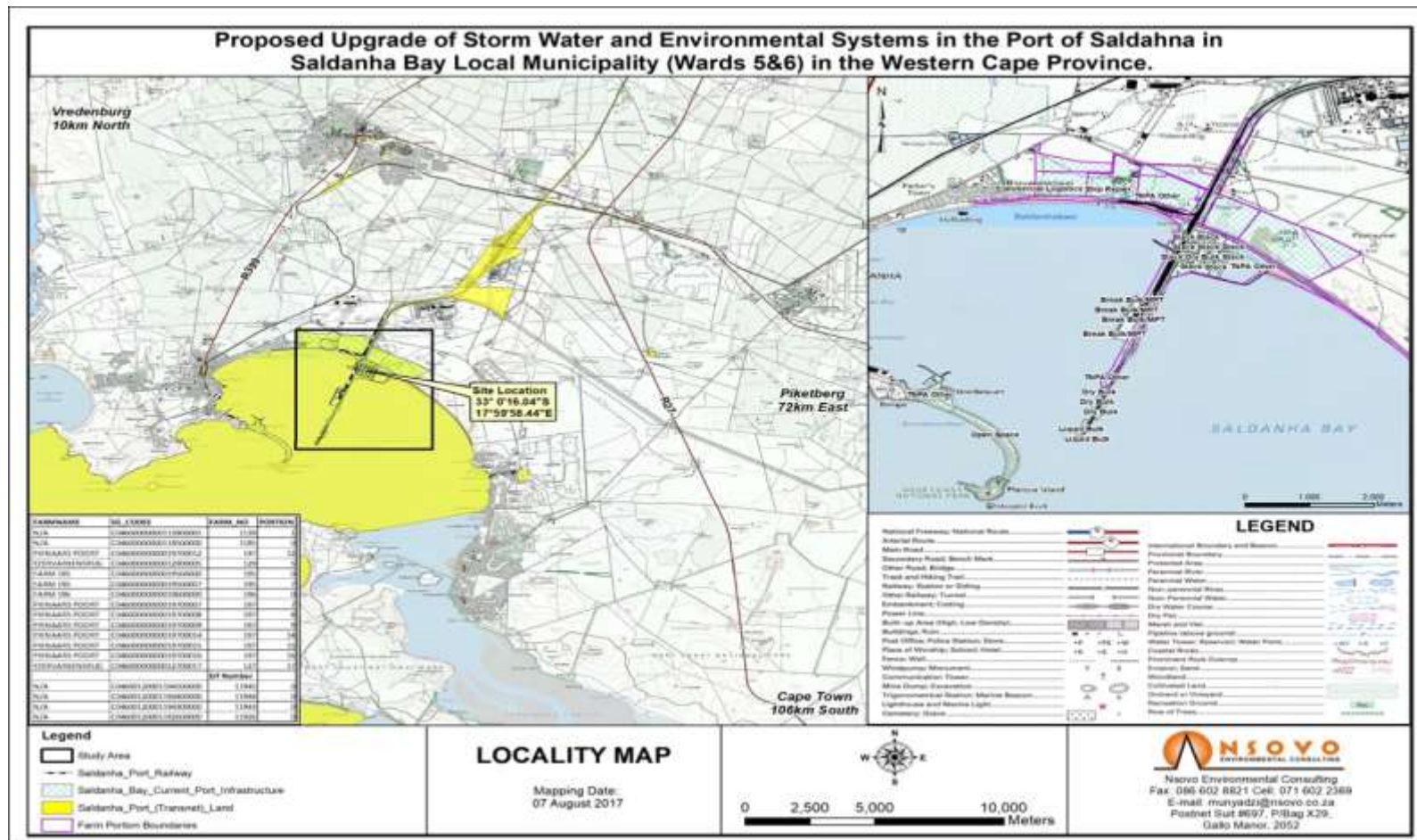


Figure 1: Locality Map displaying the Port layout

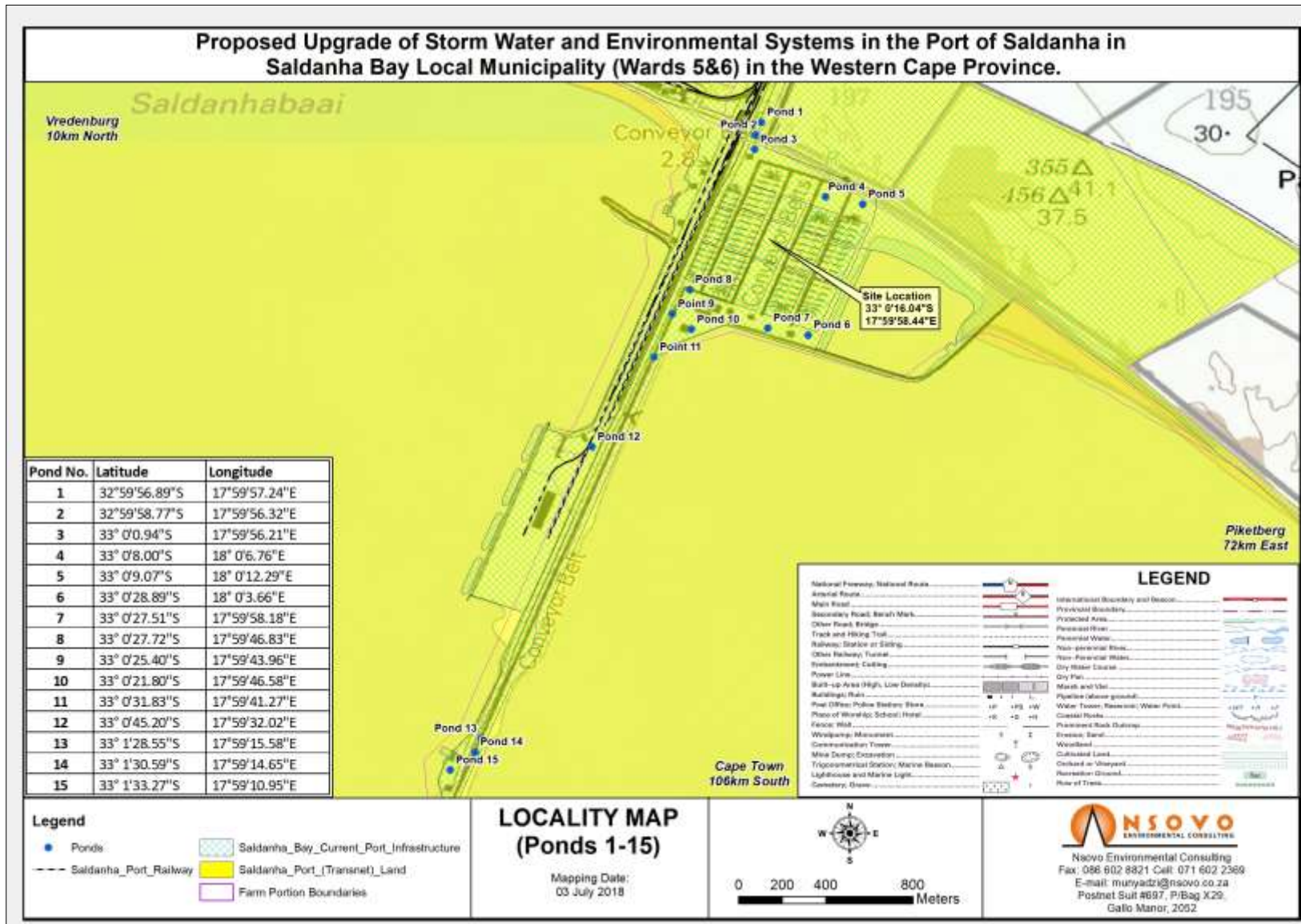


Figure 2: Zoomed in locality map depicting the proposed project site

4 PURPOSE AND SCOPE OF THE EMPR

The EMPr sets out general environmental specifications, which are applicable to the planning, construction and operation activities associated with the proposed development. This document serves as a guideline for the management of the site, provides specifications and guidelines that must in all instances be adhered to. It is the responsibility of all parties, including Contractors and sub-contractors, involved in the project to commit themselves to the implementation of the EMPr in all phases of the project.

The objectives of the EMPr are to:

- Ensure that the activity is undertaken in compliance with national and provincial environmental legislations as well as local by-laws and policies;
- Ensure that Transnet's CEMP as well as the Standard Environmental Specification (SES) and other relevant policies are underwritten at all times;
- All Landowner special conditions are identified and taken into consideration as the proposed project is located adjacent to other private properties;
- Ensure that all environmental conditions stipulated in the EA, permits and licenses are implemented;
- Detail mitigation measures, time-frames and criteria for assessing the success or failure of each measure;
- Provide detailed monitoring programmes to ensure compliance;
- Provide input and strategies for environmental quality control and risk management;
- To preserve the natural environment by limiting destructive actions on site;
- Ensure appropriate restoration of areas affected by construction; and
- Prevent long term environmental degradation.

5 GENERAL ENVIRONMENTAL GUIDELINES FOR THE CONSTRUCTION PHASE

This EMPr has been compiled in fulfillment with the requirements of the NEMA and the EIA Regulations and serves as a guideline for the management of the site by Transnet and their Contractor(s) as well as subcontractor(s) in order to minimize adverse environmental impacts. Transnet will be responsible for ensuring compliance of the Contractor with the EMPr and will rely on the Environmental Control Officer (ECO) to monitor compliance. The Contractor must in turn monitor their employees to ensure compliance with the provisions of the EMPr.

The Contractor(s) shall receive a copy of the EMPr from Transnet on which they will be given the opportunity to clear any misconceptions and uncertainties. The EMPr will form part of the contract and will therefore be a legally binding document. In

the event of discrepancy with regard to environmental matters or environmental specifications, this document shall take precedence.

6 APPLICABLE LEGISLATION

This list is not intended as an exhaustive analysis of the applicable environmental legislation but provides a guideline to the relevant aspects of each Act.

Table 2: Legislation pertaining to the proposed project

Aspect	Relevant Legislation	Brief Description
Environment	National Environmental Management: Act 1998, (Act No. 107 of 1998)	The overarching principles of sound environmental responsibility are reflected in the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), The principles set out in the National Environmental Management Act, 1998 (Act No. 107 of 1998), hereafter, referred to as NEMA, apply to all listed projects. Construction and operation have to be conducted in line with the generally accepted principles of sustainable development, integrating social, economic and environmental factors.
Biodiversity	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	The purpose of the National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed.
Protected Areas	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)	The purpose of this Act is to provide for the protection, conservation and management of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes.
Heritage Resources	National Heritage Resources Act, 1999 (Act No. 25 of 1999)	The National Heritage Resources Act, 1999 (Act No. 25 of 1999) legislates the necessity for cultural and heritage impact assessment in areas earmarked for development, which exceed

Aspect	Relevant Legislation	Brief Description
		0.5 ha. The Act makes provision for the potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA).
Air quality management and control	National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)	<p>The object of the Act is to protect the environment by providing reasonable measures for the protection and enhancement of the air quality and to prevent air pollution.</p> <p>Section 32 of The National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) deals with dust control measures in respect of dust control. Whilst none are promulgated at present, it provides that the Minister or MEC may prescribe measures for the control of dust in specified places or areas, either in general or by specified machinery or in specified instances, the steps to be taken to prevent nuisance by dust or other measures aimed at the control of dust.</p>
Noise Management and Control	Noise Control Regulations in terms of the Environmental Conservation, 1989 (Act 73 of 1989)	The assessment of impacts relating to noise pollution management and control, where appropriate, must form part of the EMP. Applicable laws regarding noise management and control refer to the National Noise Control Regulations issued in terms of the Environment Conservation, 1989 (Act 73 of 1989).
Water	National Water Act, 1998 (Act 36 of 1998)	This Act provides for fundamental reform of law relating to water resources and use ¹ . The preamble to the Act recognizes that the ultimate aim of water resource management is to achieve sustainable use of water for the benefit of all users and that the protection of the quality of water resources is necessary to ensure sustainability of the nation's water resources in the interests of all water users.
Agricultural Resources	Conservation of Agricultural Resources	The Act aims to provide for control over the utilization of natural agricultural resources in order to promote the conservation of the

Aspect	Relevant Legislation	Brief Description
	Act, 1983 (Act No. 43 of 1983)	soil, water resources and vegetation and to combat weeds and invader plants. Section 6 of the Act makes provision for control measures to be applied in order to achieve the objectives of the Act.
Human	The Constitution of South Africa, 1996 (Act No. 108 of 1996)	<p>The Constitution of South Africa, 1996 (Act No. 108 of 1996) provides for an environmental right (contained in the Bill of Rights, Chapter 2). In terms of Section 7, the state is obliged to respect, promote and fulfill the rights in the Bill of Rights. The environmental right states that:</p> <p>“Everyone has the right -</p> <p>a) To an environment that is not harmful to their health or well-being; and</p> <p>b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that -</p> <ul style="list-style-type: none"> -Prevent pollution and ecological degradation; -Promote conservation; and -Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”
Waste	National Environmental Management Waste Act, 2008 (Act 59 of 2008)	To reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; to provide for institutional arrangements and planning matters; to provide for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management measures; to provide for the licensing and control of waste management activities; to provide for the remediation of contaminated land; to provide for the national waste information system; to provide for compliance and enforcement; and to

Aspect	Relevant Legislation	Brief Description
		provide for matters connected therewith.
Hazardous substances	Hazardous Substances Act 15 of 1973	This act provides for the control of substances which may result in injuries or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances. It provides for the division of substances or products into products into groups in relation to danger.
Marine resources	Marine Living Resources Act No. 18 of 1998	The aim of this act is to provide for the conservation of the marine ecosystem, the long term sustainable utilization of marine living resources and the orderly access to exploitation, utilization and protection of certain marine living resources. This act ensures the control over marine living resources in a fair and equitable manner to the benefit of all the citizens of south Africa.
Coastal management	National Environmental Management: Integrated Coastal Management Act No. 24 of 2008	This act aims at establishing a system of integrated coastal and estuarine management in the republic which includes the norms, standard and policies as a way of promoting the conservation of the coastal environment and maintaining the natural attributes of coastal landscapes and seascapes. Another aim of this act is to ensure that development and the use of natural resources within the coastal zone is socially and economically justifiable and ecologically sustainable. It prohibits incineration and dumping at the sea, controls the pollution in the coastal zone. It prevents the inappropriate development of the coastal environment and other adverse effects on the coastal environment.

6.1 PROVINCIAL AND MUNICIPAL BY LAWS

The contactor and environmental officer must adhere to all the provincial and municipal by laws to ensure compliance within the port which leads to environmental protection, management and sustainability.

6.2 STANDARD TRANSNET POLICIES TO BE COMPLIED WITH

In addition to the approved EMPr, EA and other permits and licenses, the construction activities must also comply with the standard Transnet documents. These documents must be provided to the Contractor, Environmental Control Officer (ECO) and other parties by Transnet prior to commencement of construction activities. It is the responsibility of all parties involved in the implementation of the EA and EMPr to ensure that the most updated Transnet policies/documents are implemented.

6.3 METHOD STATEMENTS FOR THE ACTIVITIES TO BE CARRIED OUT

The following Method Statements (MS) related to site activities must be prepared and signed by Transnet's construction team, Transnet Environmental Officer, ECO and the Contractor prior to commencement of activities on site:

- Excavation and trenching;
- Fauna and flora management;
- Chemical/hazardous substance storage;
- Cement/concrete use;
- Training and Environmental awareness,
- Fire management;
- Emergency Response Plan;
- Storm water and soil erosion management;
- Waste management;
- Contaminated water management;
- Site establishment and site layout plan;
- Temporary site closure;
- Site rehabilitation;
- Alien plants removal and use of herbicides and pesticides; and
- Dust suppression.

The ECO or Transnet EO may require additional method statements to be submitted as the project progresses.

7 ROLES AND RESPONSIBILITIES OF THE PROJECT TEAM

7.1 ENVIRONMENTAL CONTROL OFFICER (ECO)

The ECO shall be responsible for evaluating compliance of all aspects of the EMPr. Audits must be undertaken as per the EA conditions and in accordance with Appendix 7 of the EIA Regulations as amended and a detailed report submitted to Transnet and DEA.

Any discrepancies or areas of non-compliance with regard to the EMPr requirements will be communicated immediately in writing, to Transnet by the ECO. The ECO shall convey the contents of this document, the conditions of the Environmental Authorisation from DEA or any relevant Competent Authority as well as the Landowner Special conditions to Transnet site staff and discuss the contents in detail with the Transnet Project Manager and Contractor(s) during induction training. This formal training shall be done with all main and sub-contractors. Record of the training date, people whom attended and aspects discussed shall be kept on file by the ECO.

- Landowner shall be informed timeously of the construction programme, duration and all interference with their daily activities.
- The contact numbers of the ECO and Transnet EO shall be made available to Landowners.
- The ECO shall report progress made on a monthly basis to the Project Manager.
- These reports shall be available at all times, on site or in project file and on request by auditors, and other I&APs.
- ECO shall record all non-compliances and action plans to ensure that measures are put in place to mitigate possible effect.

7.2 TRANSNET ENVIRONMENTAL OFFICER

- To implement and integrate environmental management systems by ensuring compliance
- Reports environmental incidents
- Provides environmental training
- Ensures compliance to legislations and other legally binding documents

7.3 CONTRACTOR

The roles of the contractor include the following:

- To provide all necessary supervision during the execution of the project. He/She must be available on site at all times work is taking place.
- To appoint a competent EO.
- To implement the project as per the approved project plan.
- To ensure that implementation is conducted in an environmentally acceptable manner.
- To fulfil all obligations as per the agreed contract.
- To comply with special conditions as stipulated by Landowners during the negotiation process.

- To inform and educate all employees about the environmental risks associated with the different activities that must be avoided during the construction process and lessen significant impacts to the environment.

7.4 COMPETENT AUTHORITY

The role of the Competent Authority is to enforce compliance with the conditions and requirement of the EA, permits, licences and the EMPr and is responsible for acting against any non-compliance by the Client or any of his/her contractors. The Competent Authority can request a compliance audit to be undertaken on the site at any time during the development phase of the project.

8 DESCRIPTION OF MITIGATION MEASURES

The following section serves to prescribe mitigation measures to prevent pollution, protect the environment and ensure compliance to legal obligations through reduction and elimination of identified negative impacts.

9 PRE- CONSTRUCTION MANAGEMENT PROGRAMME

The pre-construction management programme is to be used as a guide during the planning, design and detailing of the development components. This section of the programme is to be referenced by all involved in decision making during the planning and design phases.

9.1 COMMISSIONING OF TENDER

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<p>To ensure that all contractors are aware of the compliance obligations by informing all parties of appropriate environmental protection and pollution prevention measures.</p>	<ul style="list-style-type: none"> • The successful tendering Contractors shall be made aware of the contents of this EMPr and any penalties arising from noncompliance prior to the commencement of development. • All tendering Contractors shall be made aware of the audit and monitoring requirements as stipulated in this EMPr. • Appoint an independent Environmental Control Officer (ECO) who shall be responsible to monitor compliance to the EMPr. • Inform the Department regarding the appointment of the ECO and provide the candidate's contact details. 	<ul style="list-style-type: none"> • Signed declaration by contractor. • Appointment Letter • Proof of submission to DEA. 	<ul style="list-style-type: none"> • Transnet • Contractor 	<ul style="list-style-type: none"> • Prior commencement of construction activities

10 CONSTRUCTION MANAGEMENT PROGRAMME

10.1 SITE ESTABLISHMENT

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<p>To ensure minimal disturbance and potential degradation of the environment during the site establishment.</p>	<p>Prior to site establishment, the Project Manager (PM) and ECO must identify suitable areas.</p> <p>Subsequently, site establishment shall take place in an orderly manner and all amenities shall be installed before the main workforce moves onto site.</p> <p>Construction camps on the site must be established on least sensitive locations preferably within already disturbed areas. After completion of the activities, these areas must be rehabilitated to the satisfaction of the ECO.</p> <p>10.1.1 Site Plan:</p> <p>Documentation for the proposed site must be prepared by the Contractor prior to commencement of construction activities, and must be submitted to Transnet for approval. This documentation must include, but not limited to the following:</p> <ul style="list-style-type: none"> • Site access (including entry and exit points). • All material and equipment storage areas including 	<ul style="list-style-type: none"> • Observation • Site Plan 	<ul style="list-style-type: none"> • ECO • Contractor • EO • TER 	<ul style="list-style-type: none"> • Prior to site establishment

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	<p>storage areas for hazardous substances.</p> <ul style="list-style-type: none"> • Construction offices and other structures. • Solid waste management facilities. • Storm water control measures during construction. • Provision of potable water and mobile chemical ablution facilities. <p>Throughout the construction period, the Contractor shall restrict all activities within the designated areas as per the construction layout plan. Any relaxation or modification of the construction layout plan is to be approved by the ECO.</p> <p>10.1.2 Site Camps:</p> <p>The following restrictions shall be placed on the site camp for the construction staff in general:</p> <ul style="list-style-type: none"> • The use of water courses for washing of clothes. • The use of welding equipment, oxy-acetylene torches and other bare flames where there are sources that could result in fires. • Animal poaching of any form. • Unauthorised fishing. • Dumping of waste into the sea and other water bodies. 			

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	<ul style="list-style-type: none"> • Use of surrounding environment as toilets. <p>10.1.3 Vegetation clearing:</p> <ul style="list-style-type: none"> • The indigenous vegetation encountered on site is to be conserved and left intact as far as possible. • Only flora within the construction footprint must be cleared. Clearance must be as per the approved MS in line with Transnet policies. <p>10.1.4 Water for human consumption:</p> <p>Water for human consumption must be available at the site camp and at other convenient and accessible locations on site. Water must be obtained from an approved source. Water consumption/usage must be in accordance with the Western Cape Province water restriction limits.</p> <p>10.1.5 Sewage Treatment:</p> <ul style="list-style-type: none"> • Chemical mobile toilets must be supplied (in accordance with relevant construction regulations) and must be regularly cleaned and maintained by the Contractor. • The Contractor must arrange for regular emptying of toilets and will be entirely responsible for enforcing their use and for maintenance. 			

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	<ul style="list-style-type: none"> All ablution facilities must be anchored to prevent them from being blown over by the wind. Unauthorised emptying of toilets into the sea is strictly prohibited 			

10.2 SENSITIVE ECOLOGY

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> To ensure that the sensitive area is not disturbed. To ensure minimal or if all possible no disturbance to the vegetation on and around the site. To prevent negative impact on animal life. 	<p>Mitigation measures for the terrestrial environment include:</p> <ul style="list-style-type: none"> Informal storm water retention ponds to be excavated in natural areas where possible: top soil must be kept separate and is to be re-applied once the informal ponds have been excavated. Ensure that intact vegetation is temporarily fenced off at all building sites adjacent to natural areas. Demarcate the construction footprint where possible to avoid unnecessary vegetation clearing. Ensure that 'No-Go' areas are clearly demarcated and/or fenced before construction starts. Effective barriers are to be maintained in good order throughout the course of the construction. The natural vegetation encountered on the site is to be 	<ul style="list-style-type: none"> Observation ECO to monitor Site plan 	<ul style="list-style-type: none"> Transnet Contractor 	<ul style="list-style-type: none"> Prior to construction

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	<p>conserved and left intact as far as possible.</p> <ul style="list-style-type: none"> • Only vegetation directly affected by the works must be cleared. • No open fires are permitted within naturally vegetated areas. • Formalise access roads and make use of existing roads and tracks where feasible, rather than creating new routes through naturally vegetated areas. • Retain vegetation and soil in position for as long as possible in that area • Only manual removal of weeds will be permitted on site. Chemical control is not allowed on site. • Implement an alien invasive plant monitoring programme to avoid the introduction and spread of alien and invasive plant species on site. • Rubble and waste is not to be dumped in natural areas or water courses <p>Considering the nature of the project and the site , the following measures must be implemented:</p> <ul style="list-style-type: none"> • Any fauna threatened by construction activities must be removed to safety by the ECO or other suitably qualified person. 			

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	<ul style="list-style-type: none"> • During construction all vehicles must adhere to demarcated tracks or roads and the speed limit must not exceed 30km/h. • Where necessary, dust suppression must be implemented to reduce dust impacts on surrounding areas. • All construction staff must undergo environmental induction before construction commences in order to raise awareness and reduce potential faunal impacts. • To avoid impacts on marine life, all spills of hazardous material must be cleared in the appropriate manner according to the nature and identity of the spill and all contaminated soil removed from the site. 			

10.3 MATERIALS HANDLING, USE AND STORAGE

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> • To ensure safe handling, storage use and disposal of hazardous substances. • To ensure full compliance with the 	<p>The Contractor's management and maintenance of plant and machinery will be strictly monitored according to the criteria given below:</p> <p>10.3.1 Safety:</p> <ul style="list-style-type: none"> • All the necessary handling and safety equipment required for 	<ul style="list-style-type: none"> • Observation • Incident Report 	<ul style="list-style-type: none"> • ECO & • Contractor • EO 	<ul style="list-style-type: none"> • Continuous throughout the construction phase

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<p>requirements of the applicable legislation.</p>	<p>the safe use of hydrocarbons shall be provided by the Contractor to be used and/or worn by the staff.</p> <ul style="list-style-type: none"> • The Contractor must comply with the Occupational Health and Safety Act (Act 85 of 1993) and Construction Regulations, 2003 as this governs what the Contractor must do and provide for his staff. <p>10.3.2 Hazardous Material Storage:</p> <ul style="list-style-type: none"> • Hydrocarbons and hazardous substances will only be stored under controlled conditions. • All hazardous materials will be stored in a secured, designated area with restricted entry. • Storage of hazardous products shall only be in suitable containers. The containers must indicate the nature of the stored materials and Safety Data Sheets (SDS). <p>10.3.3 Fuels and Gas Storage:</p> <ul style="list-style-type: none"> • Fuel tanks/bowsers shall be situated on impermeable surfaces with secondary containment. The impermeable lining shall extend to the crest of the bund and the volume inside the bund shall be 110% of the total capacity of all the storage tanks/bowsers. Gas cylinders must be stored in a secure, well-ventilated area. 			

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	<ul style="list-style-type: none"> The Contractor must supply sufficient fire fighting equipment in the event of an accident. Strictly no smoking will be allowed where fuel is stored and used. 			

10.4 EMPR TRAINING

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
To ensure that all site personnel have basic level of environmental awareness training.	<ul style="list-style-type: none"> Communication must be as per the Transnet and or Contractor's internal communication process which shall be established, documented and retained. The Contractor's EO shall arrange for Environmental Awareness Training programs for all personnel on site. The training must include the content of the EMPr and the Contractor's EO must sensitise the team on the importance of compliance. Weekly toolbox talks must be undertaken by the Contractor's EO. Training records shall be kept on site for the duration of the project and archived as retained information throughout the project lifecycle. Evidence of communication shall be retained by both Transnet and the Contractor as appropriate. 	<ul style="list-style-type: none"> Signed training attendance Register Declaration of good conduct signed by all site personnel 	<ul style="list-style-type: none"> Contractor's EO 	<ul style="list-style-type: none"> Prior construction and to continue throughout construction through toolbox talks.

10.5 WATER SUPPLY

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> • To ensure availability of water for various uses as and when required. • To ensure that water usage is minimized. • To conserve water resources at all times. • To encourage a 3R (Reduce, Reuse, Recycle) 	<p>Water for construction purposes will be sourced from the same water source that's supplying the Port.</p> <ul style="list-style-type: none"> • All alternative water sources must be authorized and proof of such must be presented to the ECO. • Should abstraction of water be necessary at any given point, the necessary Water Use Authorisation for the water source(s) must be obtained. • Contractor must ensure absolute conservation of water throughout the construction period. • Grey water should be used for dust suppression as far as reasonably practical without compromising the commodity quality. • Contractor must supply potable water for human consumption at all times. • Contractors shall not make use of/collect water from any other source than those pointed out to them as suitable for use. • Alternative dust suppression measures must be implemented where feasible. 	<ul style="list-style-type: none"> • Water consumption record 	<ul style="list-style-type: none"> • ECO • Contractor 	<ul style="list-style-type: none"> • Ongoing during the construction phase

10.6 VEHICULAR ACCESS AND MOVEMENT OF CONSTRUCTION VEHICLES

Possible Impact	Objective	Applicable Legislation /Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> • Damage to protected /endangered vegetation. • Damage to sensitive areas. • Erosion and loss of topsoil. 	<ul style="list-style-type: none"> • To prevent ecological damage. • Minimise damage to the identified watercourses. • Minimise erosion of embankments and subsequent siltation of watercourses. 	<ul style="list-style-type: none"> • NEMBA • NWA 	<ul style="list-style-type: none"> • Access roads and working areas must be demarcated and indicated on the site layout plan. • Access roads shall be maintained by the Contractor. • No roads shall cut through water courses as this may lead to erosion causing siltation of streams without necessary approval from DWS. • Upon completion of the project all roads shall be repaired to their original state prior to construction. • All existing roads damaged during the construction phase must at the end of construction be repaired to the satisfaction of the landowner, as per the conditions of the written contractual agreement between the landowner and the Contractor. 	<ul style="list-style-type: none"> • Access plan approved by the ECO • No access roads through identified sensitive areas in and around the site. • No visible erosion scars once construction is completed. • Erosion is not evident on slopes. • Use of designated access roads 	<ul style="list-style-type: none"> • Photographic record of private roads prior to the Contractor using the roads. Site plan. • Regular monitoring of access roads conditions. 	<ul style="list-style-type: none"> • ECO & Contractor 	<ul style="list-style-type: none"> • Continuous during the construction phase

Possible Impact	Objective	Applicable Legislation /Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
				<ul style="list-style-type: none"> No complaints from the landowners. 			

10.7 MOVEMENT OF CONSTRUCTION PERSONNEL AND EQUIPMENT

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> Impact on sensitive environments . Trespassing Safety and security. 	<ul style="list-style-type: none"> To ensure controlled and manageable movement of personnel and equipment. 	<ul style="list-style-type: none"> NEMBA OHSA 	<ul style="list-style-type: none"> The Contractor must ensure that all construction personnel, labourers and equipment remain within the demarcated construction sites at all times. Where construction personnel move outside the boundaries of the site, the Contractor/ labourers must obtain permission from the Construction Manager All equipment moved onto site or off site is subject to the legal requirements as well as Transnet 	<ul style="list-style-type: none"> No trespassing of contractor's workforce. No complaints from landowners. 	<ul style="list-style-type: none"> Observation Security registers. Complaints register 	ECO & Contractor	Continuous throughout the construction phase.

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			<p>specifications for the transport of such equipment. The Contractor shall meet these safety requirements under all circumstances.</p> <ul style="list-style-type: none"> • All equipment transported shall be clearly labelled as to their potential hazards according to specifications. • All the required safety labelling on the containers and trucks used shall be in place. • The Contractor shall ensure that all the necessary precautions against damage to the environment and injury to persons are taken in the event of an accident and shall provide a Method statement to that effect. • The Contractor is to ensure that no machinery, personnel, material, or equipment enters 'No-Go' areas during the course of the project. 				

10.8 PROTECTION OF MARINE AND TERRESTRIAL SEDIMENTS

Possible: Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> Ecological effects on the marine system through the disturbance of marine sediments and runoff of the contaminated of terrestrial sediments during construction 	<ul style="list-style-type: none"> To prevent the ecological effects To minimise or prevent the runoff of the contaminated terrestrial sediments 	<ul style="list-style-type: none"> NEM:ICMA 	<ul style="list-style-type: none"> Minimize runoff as much as possible and cover disturbed sediments. Ensure that construction does not coincide with heavy rainfall Conduct dust suppression techniques on all dust generating surfaces. Handling of soils shall not be conducted during high winds (30km/h) Soil stockpiles shall be secured appropriately to prevent dust generation. The speed of construction vehicles shall be restricted within the construction area or near stockpiles. Trucks transporting any form of soil or waste shall be covered with a tarpaulin. 	<ul style="list-style-type: none"> No reported marine and terrestrial sediments problems No complaints from landowners 	<ul style="list-style-type: none"> Observation Complaints register that records complaints from landowner Daily inspection 	<ul style="list-style-type: none"> ECO Contractor's EO 	On-going during the construction phase.

Possible: Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			<ul style="list-style-type: none"> • Care must be taken in the vicinity of the drainage lines and existing roads must be used as much as possible for access during construction. • Contractors and working staff should stay within the development footprint and movement outside these areas including avian micro-habitats must be restricted. • Under no circumstances shall any animals be hunted, handled, killed or be interfered with by the construction team. • Domesticated animals are not allowed on site. • The Contractor shall keep the site clean and tidy from waste material that can attract animals. • Any open excavations must be regularly inspected to rescue any 				

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			fauna that may have fallen in. <ul style="list-style-type: none"> Records of any injured or deaths of fauna within the construction site must be kept by the Contractor's EO and ECO. 				

10.9 PROTECTION OF FAUNA AND AVIFAUNA

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> Damage to habitat Negative impact on bird due to electrocution and faulting Negative impact on animal life. 	<ul style="list-style-type: none"> To conserve animal life. To ensure that impact on natural vegetation is kept to the minimum in order to conserve suitable 	<ul style="list-style-type: none"> NEMBA 	<ul style="list-style-type: none"> Vegetation clearing should be kept to a minimum and restricted to the proposed development footprint only. Avoid unnecessary disturbance of faunal habitats. Care must be taken near the drainage lines and existing roads must be used as much as possible for access during construction. Under no circumstances shall any 	<ul style="list-style-type: none"> No reported faunal injuries No complaints from landowners 	<ul style="list-style-type: none"> Observation Complaints register that records complaints from landowners Daily inspection 	<ul style="list-style-type: none"> ECO Contractor's EO 	<ul style="list-style-type: none"> On-going during the construction phase.

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	<p>habitats as much as possible.</p> <ul style="list-style-type: none"> To prevent degradation of suitable sensitive fauna habitats. To prevent contamination of water within the nearby watercourse thereby preserving several amphibian species. To ensure that impact on sensitive fauna species 		<p>animals be hunted, handled, killed or be interfered with by the construction team.</p> <ul style="list-style-type: none"> Domesticated animals are not allowed on site. The Contractor shall keep the site clean and tidy from waste material that can attract animals. Any open excavations must be barricaded and regularly inspected to rescue any fauna that may have fallen in. Records of any injured or deaths of fauna within the construction servitude must be kept by the EO and ECO. 				

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	<p>is kept to a minimum</p> <ul style="list-style-type: none"> To prevent injury or death of fauna species as a result of falling into open excavations 						

10.10 HERITAGE AND/OR ARCHAEOLOGICAL SITES

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> Destruction of sites of archaeological and heritage significance. Loss of historic 	<ul style="list-style-type: none"> To preserve any heritage, cultural or archaeological sites that might be encountered during the 	<ul style="list-style-type: none"> NHRA 	Investigation of past archaeological studies in the region, aerial photography and historical map, coupled by a site visit revealed that the development is proposed on an area where no archaeological sites, burial grounds or isolated artefacts can be found.	<ul style="list-style-type: none"> Detailed record of chance finds. No destruction of or damage to known archaeological sites 	<ul style="list-style-type: none"> Intermittent observation. 	<ul style="list-style-type: none"> ECO & Contractor Contractor' EO Archaeologist 	<ul style="list-style-type: none"> On-going during all excavations

<p>cultural landscape.</p> <ul style="list-style-type: none"> Loss of intangible heritage value due to change in land use. 	<p>construction phase.</p> <ul style="list-style-type: none"> Protection of known sites against destruction, vandalism and theft. Preservation and appropriate management of any new archaeological sites should this be discovered during construction. 		<p>On that note, it is recommended that the project be exempted from any archaeological assessment studies, since the landscape is severely degraded for any archaeological site/and or artefact to be found</p> <p>However, the following general conditions must be adhered to:</p> <ul style="list-style-type: none"> If any archaeological material (e.g. fossils, bones, artefacts etc.) is found during excavation, the Contractor shall stop work immediately and inform the ECO and Transnet. The ECO shall inform Heritage Western Cape (HWC) and South African Heritage Resources Agency (SAHRA) to arrange for a registered heritage specialist for inspection, and if necessary excavate the material, subject to acquiring the necessary approval 	<ul style="list-style-type: none"> Management of existing sites and new discoveries in accordance with the recommendations of the Archaeologist No litigation due to destruction of sites. 			
---	--	--	--	--	--	--	--

			<p>from HWC and SAHRA.</p> <ul style="list-style-type: none"> • The Contractor shall not recommence working in that area until written permission has been received from the HWC and SAHRA. • Under no circumstances may any heritage material be destroyed or removed from site until the necessary approval has been obtained from HWC and SAHRA. Should any remains be found on site (potential human remains) the South African Police Services (SAPS) must be contacted. • An information section on cultural resources must be included in the environmental training given to Contractors involved in earthmoving and trenching activities. This section must include basic information on: <ul style="list-style-type: none"> ○ Heritage; ○ Graves; ○ Palaeontology; 				
--	--	--	---	--	--	--	--

			<ul style="list-style-type: none"> ○ Archaeological finds; and ○ Historical Structures. 				
--	--	--	---	--	--	--	--

10.11 SERVICING AND RE-FUELLING OF CONSTRUCTION EQUIPMENT

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> • Impact on soil and water resources due to accidental spillages. 	<ul style="list-style-type: none"> • To conserve soils, surface and ground water. • To prevent spillages of hazardous substances 	<ul style="list-style-type: none"> • NEMWA • NWA • OHSA 	<ul style="list-style-type: none"> • All maintenance and repair work shall be carried out within an area designated for this purpose, equipped with necessary pollution containment measures. • Refuelling, greasing or oiling of vehicle and construction machinery shall be done on a drip tray or banded surface. • Drip trays shall be placed under stationary vehicles and machinery at all times. • Construction vehicles are to be maintained in an acceptable state of repair. No vehicles or equipment with leaks or causing spills will be permitted on site. • Fuels required during construction 	<ul style="list-style-type: none"> • No evidence of hazardous substances polluting the site. 	<ul style="list-style-type: none"> • On-going monitoring with regular inspections; and • Service Records. 	<ul style="list-style-type: none"> • ECO & • Contractor • EO 	<ul style="list-style-type: none"> On-going during the construction phase

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			<p>must be stored at a central depot that must be located on a slab and be contained within a bund capable of containing at least 110% of the total volume in the containers.</p> <ul style="list-style-type: none"> Temporary fuel storage tanks and transfer areas also need to be located on an adequately bunded surface to contain accidental spillages. 				

10.12 WASTE MANAGEMENT

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> Generation of solid waste and disposal during construction 	<ul style="list-style-type: none"> To ensure the efficient management of waste on site To ensure minimal impact on the 	<ul style="list-style-type: none"> NEMWA 	<p>The generation of waste is inevitable at construction sites. Therefore; the following mitigation measures shall be implemented:</p> <ul style="list-style-type: none"> General waste shall be collected in a waste skip and disposed of at 	<ul style="list-style-type: none"> Presence of proper storage facilities that are properly labelled. 	<ul style="list-style-type: none"> Intermittent Observation Waste Disposal Records 	<ul style="list-style-type: none"> ECO & Contractor EO 	Daily

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<p>n</p> <ul style="list-style-type: none"> The effect of the spillage of hazardous substances on marine biota Water Land pollution 	<p>surrounding environment</p> <ul style="list-style-type: none"> Minimise waste material being strewn in the environment 		<p>a registered waste site. Proof of such disposal shall be retained by the contractor.</p> <ul style="list-style-type: none"> Recycling and reuse of waste must be implemented where feasible. Hazardous waste will be disposed at a registered hazardous waste disposal site. Refuse will be disposed of at a registered landfill site at all times. Refuse will not be burned or buried on or near the site but will be appropriately disposed of and records of the type and quantity of waste disposed will be kept on site. <p>10.12.1 SOLID WASTE MANAGEMENT</p> <ul style="list-style-type: none"> Inform all staff about sensitive marine species and the 	<ul style="list-style-type: none"> Post-construction work areas are clear of all waste materials. 			

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			<p>responsible disposal of construction waste.</p> <ul style="list-style-type: none"> • Suitable handling and disposal protocols must be clearly explained and sign boarded • Waste must be separated at source (e.g. containers for glass, paper, metals, plastic, organic waste and hazardous waste). • An adequate number of scavenger proof refuse bins shall be provided at the construction site and must be clearly labelled (general or hazardous) according to waste streams. • All waste shall be transported in an appropriate manner (e.g. plastic rubbish bags) and disposed of at a licensed waste disposal facility. Proof of safe disposal must be kept on site. • The Contactor shall not dispose 				

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			<p>of any waste and / or construction debris by burning, or burying.</p> <ul style="list-style-type: none"> • Waste bins shall be emptied regularly (minimum weekly) such that they do not overflow. • The Contractor shall maintain 'good housekeeping' practices and ensure that all work sites and the construction camp is kept tidy and litter free. • The necessary approvals for the storage areas must be sought and recommendation made adhered to. <p>10.12.2 LIQUID WASTE MANAGEMENT</p> <ul style="list-style-type: none"> • An adequate number of suitable containers with lids must be provided at the construction site. • The Contractor will ensure that 				

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			<p>waste water is discharged in the drums provided.</p> <ul style="list-style-type: none"> All waste must be transported in an appropriate manner and disposed of at a licensed waste disposal site. <p>10.12.3 HAZARDOUS SUBSTANCES MANAGEMENT</p> <ul style="list-style-type: none"> Ensure that stringent waste management practices are in place at all times Maintain high safety standards and employ “good housekeeping” on the site. This should incorporate plans for emergencies No vehicle maintenance or refuelling on the construction site. Use drip trays and/or 				

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			<p>bunding where spillages are likely to occur.</p> <ul style="list-style-type: none"> Accidental diesel and hydrocarbon spills must be cleaned up accordingly. Collect and dispose of polluted soil at appropriate bio-remediation sites 				

10.13 TERRESTRIAL BIODIVERSITY MANAGEMENT

Possible Impact	Objective	Applicable Legislation /Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> Loss of vegetation type (including intact vegetation, ecologically important species and species of 	<ul style="list-style-type: none"> To reduce the loss of vegetation To avoid loss of ecological processes associated with loss of intact 	NEMBA	<ul style="list-style-type: none"> Immediate rehabilitation of any areas disturbed as a result of construction activities. Use species that are specific to the original vegetation type of the affected area (ensure to keep top soil separate). Water use related activities must be approved by DWS prior to 	<ul style="list-style-type: none"> Unpolluted water course. 	<ul style="list-style-type: none"> Observation Design Plans 	<ul style="list-style-type: none"> Contractor ECO EO 	<ul style="list-style-type: none"> Continuous through the construction phase.

Possible Impact	Objective	Applicable Legislation /Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<p>conservation concern);</p> <ul style="list-style-type: none"> Loss of ecological processes associated with the loss of intact vegetation, ecologically important species and species of conservation concern; Rehabilitation of erosion-prone areas. 	<p>vegetation ecologically important species</p> <ul style="list-style-type: none"> To ensure proper rehabilitation of erosion prone areas To ensure compliance with the requirements of the Act. 		<p>commencement. Conditions and recommendations of the WUL must be adhered to at all times.</p> <ul style="list-style-type: none"> No unauthorised activities should occur within a 100m or within the 1:100 year flood line. The Contractor must take reasonable precautions to prevent the pollution of ground and surface water resources as a result of construction activities. No natural watercourse is to be used for the cleaning of tools. This includes for purposes of bathing, or washing of clothes etc. No spills may be hosed into the surrounding natural environment. All soil contaminated must be excavated to the depth of contaminant penetration, placed in suitable drums/containers and 				

Possible Impact	Objective	Applicable Legislation /Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			<p>removed to a hazardous waste facility.</p> <ul style="list-style-type: none"> • No extraction of water from any natural resources without the relevant authorisation. • Storm water management measures must be as per the Method Statement. • Any physical damage to any aspect of a watercourse shall be prohibited. • Minimize the extent of damage to flood plains that is necessary to complete the works, and will not pollute any water course as a result of construction. 				

10.14 HAZARDOUS MATERIALS

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Impact on	• To ensure	• HSA	• The Contractor must comply with all	• No incidents	• Hazardous	• ECO &	• Continuous

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
soils and water resources	safe and proper handling of hazardous material		<p>National, regional and local legislation with regard to the storage, transport, use and disposal of petroleum, chemical, harmful and hazardous substances and materials.</p> <ul style="list-style-type: none"> • Spill kits shall be made available on site at all times. • The Contractor's EO will furthermore be responsible for the training and education of all personnel on site who will be handling the material about its proper use, handling and disposal. • Storage of all hazardous material is to be safe, tamper proof and under strict control. • Exercise extreme care with the handling of diesel and other toxic solvents to ensure that spillage is avoided. • Any accidental chemical / fuel spills shall be remediated immediately. 	reported	<p>material data sheet</p> <ul style="list-style-type: none"> • Incident reports • Observation of spillages and leakages 	<ul style="list-style-type: none"> • Contractor • EO 	throughout the construction phase

10.15 SURFACE AND GROUND WATER MANAGEMENT

Possible Impact	Objective	Applicable Legislation /Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> Possible contamination of water resources. 	<ul style="list-style-type: none"> To conserve all natural water resources To avoid illegal diversion and destruction of water resources. To ensure proper management of storm water run-off that causes erosion and siltation/sedimentation To ensure that the rivers and 	NWA	<ul style="list-style-type: none"> Water use related activities shall be approved by DWS prior to commencement. Conditions and recommendations of the WUL shall be adhered to at all times. No unauthorised activities shall occur within a 100m or within the 1:100 year flood line. The Contractor must take reasonable precautions to prevent the pollution of ground and surface water resources as a result of construction activities. No water resource shall be used for the cleaning of tools. This includes for purposes of bathing, or washing of clothes etc. No spills shall be hosed into the surrounding natural environment. All soil contaminated shall be excavated to the depth of 	<ul style="list-style-type: none"> Unpolluted watercourse 	<ul style="list-style-type: none"> Observation Design Plans 	<ul style="list-style-type: none"> Contractor ECO EO 	<ul style="list-style-type: none"> Continuous through the construction phase.

Possible Impact	Objective	Applicable Legislation /Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	<p>streams are protected and incur minimal negative impact from the development.</p> <ul style="list-style-type: none"> To ensure compliance with the requirements of the Act. To ensure the protection of marine resources 		<p>contaminant penetration, placed in suitable drums/containers and removed to a hazardous waste facility.</p> <ul style="list-style-type: none"> Erosion control measure must be put in place to control storm water runoff. Storm water management measures shall be implemented as per the Method Statement. Erosion control on all access roads must be undertaken. Place drip trays under stationary machinery, only re-fuel machines at the temporary fuelling station. Install temporary structures to trap fuel spills at the temporary fuelling station. Immediately clean oil and fuel spills and dispose of contaminated material (soil, etc.) at licensed waste disposal sites 				

Possible Impact	Objective	Applicable Legislation /Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			<p>only.</p> <ul style="list-style-type: none"> • Do not release any pollutants, including sediment, sewage, cement, fuel, oil, chemicals, hazardous substances, waste water, etc., into the environment. • Compile a procedure for the storage, handling and transport of different hazardous materials and ensure that it is strictly adhered to. • Ensure vehicles and equipment are in good working order and drivers and operators are trained with respect to actions to be taken in the case of a fuel spill or leak. • Ensure that good housekeeping rules are applied. 				

10.16 SENSITIVE AREAS (WATER COURSES AND BUFFERS)

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> Changing the quantity and fluctuation properties of the watercourse. Changing the amount of sediment entering water resource and associated change in turbidity (increasing or decreasing the amount) Alteration of water quality toxic contaminants (including toxic 	<ul style="list-style-type: none"> To preserve and conserve the sensitive environment 	NWA	<p>No sensitive ecology was noted on site, however, the following must apply:</p> <ul style="list-style-type: none"> Relocate, demarcate or recommend conservation / preservation measures for any identified ecologically “sensitive” and/or protected species and areas. Point out and/or demarcate all ecologically “sensitive” areas to the contractors (e.g. red data habitats & species, rivers, streams, wetlands, sensitive soils, steep slopes and areas susceptible to erosion). Alien and invasive plant species found on the study area must be eradicated and managed according to the National Environmental Management: Biodiversity Act, 2004 (act no. 10 of 2004) and section 28 of the national environmental management act, 1998 (act no. 107 of 1998). The invasive 	<ul style="list-style-type: none"> Undisturbed sensitive environments and/or properly rehabilitated. 	<ul style="list-style-type: none"> Observation 	<ul style="list-style-type: none"> EO ECO Contractor 	<ul style="list-style-type: none"> Throughout the construction and post construction to ensure proper rehabilitation.

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<p>metal ions (e.g. copper, lead, zinc) and hydrocarbons.</p> <ul style="list-style-type: none"> Changing the physical structure within a water resource. 			<p>species control plan must be implemented at least every three month after completion of the activity. All areas of the proposed activity will be deemed as the study area.</p> <ul style="list-style-type: none"> Subject mobile equipment, vehicles and power generation equipment to noise tests at commencement and periodically throughout the construction phase; Maintain high safety standards and employ “good housekeeping” on the construction site. This should incorporate plans for emergencies; Use bunding where possible to contain terrestrial sediment run-off into the marine system, and use drip trays and/or bunding where hydrocarbon (i.e. construction vehicle fuel) losses are likely to occur; Collect and dispose of polluted soil at 				

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			<p>appropriate bio-remediation sites where practical;</p> <ul style="list-style-type: none"> Minimise run-off as much as possible i.e. ensure that construction does not coincide with heavy rainfall, cover disturbed sediment etc.; Inform all staff about sensitive marine species and the responsible disposal of construction waste; 				

10.17 OIL SPILL MANAGEMENT

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> Impact on soils and water resources 	<ul style="list-style-type: none"> To avoid ground and surface water contamination To ensure proper and 	<ul style="list-style-type: none"> HSA NEMBA 	<ul style="list-style-type: none"> An emergency response (oil spill) Management Method Statement must be put in place by the Contractor. The Contractor must prevent potential hydrocarbon spills during construction. Hydrocarbon must be stored in properly 	<ul style="list-style-type: none"> No incident reported Proper use of drip trays Presence of oil spill kit 	<ul style="list-style-type: none"> Observation Incident report 	<ul style="list-style-type: none"> ECO Contractor CEO 	On-going during the construction phase.

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	safe handling of oil spillages.		<p>contained areas so as to minimise accidental spillage.</p> <ul style="list-style-type: none"> • Use of drip trays under stationary vehicles. • All spills must be reported to the Transnet EO within 24 hours of the spill via a flash report. • The Contractor must be in possession of a mobile oil spill kit at all times. • The oil spill clean-up and rehabilitation standards need to be implemented. 				

10.18 STORM WATER MANAGEMENT

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> • Possible negative impact on water resources 	<ul style="list-style-type: none"> • To reduce the potential impact from runoff on sensitive areas. 	<ul style="list-style-type: none"> • NWA 	<ul style="list-style-type: none"> • The Contractor must ensure that rainwater pollutants from construction activities does not run-off into natural areas and thus result in a pollution threat. • Storm water shall be diverted from the 	<ul style="list-style-type: none"> • No evidence of erosion • No evidence of increased siltation • No evidence 	<ul style="list-style-type: none"> • Site Plan • Observation 	<ul style="list-style-type: none"> • ECO • Contractor • EO 	Continuous during the construction

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			<p>construction works.</p> <ul style="list-style-type: none"> • Storm water management measures must be as per the Storm water Management Method Statement prepared by the Contractor for ECO approval. • Increased runoff due to vegetation clearance and/or soil compaction must be managed and steps must be taken to ensure that storm water does not lead to excessive levels of silt entering the watercourses. • Necessary storm water control mechanisms shall be employed to ensure the sustainability of all the structures. • Effort shall be made to ensure that storm water leaving the construction site is not contaminated by any substance, whether solid, liquid or gas. 	<p>of contaminated water courses.</p>			

10.19 FIRE

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> • Destruction of property • Loss of life • Destruction of crops and livestock 	<ul style="list-style-type: none"> • To prevent open fires. • To ensure that the workforce is aware of emergency procedures should an incident occur 	<ul style="list-style-type: none"> • NEMA • NVFFA 	<ul style="list-style-type: none"> • A fire Management Method Statement approved by the ECO shall be prepared by the contractor. All the necessary precautions to ensure that fires are not started as a result of activities on site shall be implemented. • Fuels or chemicals must be stored at the designated storage area. • Gas and liquid fuels must not be stored in the same storage area. • All fire control mechanisms (fire fighting equipment) must be made available and accessible at all times and routinely inspected. • No open fires for heating or cooking will be permitted on site, unless authorised by the ECO and then only on designated areas. • Designated smoking areas must be 	<ul style="list-style-type: none"> • No reported fire incidents • No loss of life • No traces of cigarettes butts outside the designated smoking area. 	<ul style="list-style-type: none"> • Fire Management Plan • Daily checks 	<ul style="list-style-type: none"> • ECO • Contractor • EO 	<ul style="list-style-type: none"> • On-going during the construction phase

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			<p>provided, with special bins for discarding of cigarette stump.</p> <ul style="list-style-type: none"> Fires must be reported immediately. 				

10.20 AIR POLLUTION

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> Dust nuisance from excavations, vegetation clearing and gravel roads. Exhaust fumes from construction vehicles. 	<ul style="list-style-type: none"> To ensure proper mitigation of air pollution To avoid dust nuisance from excavation activities and vehicles on gravel roads 	<ul style="list-style-type: none"> NEMAQA APPA ECA 	<p>The potential air pollutants would be dust emanating from excavation activities and access roads; emissions or exhaust fumes from faulty plant or equipment. The following measures must be put in place:</p> <ul style="list-style-type: none"> Appropriate dust suppression measures or temporary stabilising mechanisms (e.g. adherence to speed limit, chemical soil binders, straw, brush packs chipping) must be put in place throughout construction, particularly during prolonged periods of dry weather. No burning of waste material is allowed. A maximum speed of 30km/hr on the 	<ul style="list-style-type: none"> No complaints from surrounding land owners recorded. No evidence of dust pollution plumes on site. 	<ul style="list-style-type: none"> Observation Complaints register 	<ul style="list-style-type: none"> ECO Contractor EO 	<ul style="list-style-type: none"> On-going throughout the construction phase

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			<p>internal access road must be adhered to in order to minimise or avoid dust pollution.</p> <ul style="list-style-type: none"> Construction vehicles and equipment must be in good working order and serviced regularly. 				

10.21 NOISE AND VIBRATION IMPACT

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> Noise and vibrations caused during construction related activities Effects of noise on marine 	<ul style="list-style-type: none"> To ensure minimal noise disturbance To ensure proper mitigation of noise. To avoid noise 	NEMA	<ul style="list-style-type: none"> Mobile equipment, vehicles and power generation equipment must be subject to noise tests which are measured against manufacturer specifications to confirm compliance before deployment on site Noise emissions from mobile and fixed equipment must be subject to periodic checks as part of regular maintenance programmes to allow for detection of 	<ul style="list-style-type: none"> No complaints from surrounding land owners recorded. 	<ul style="list-style-type: none"> Noise monitoring A register of complaints to be kept on site at all times and kept up to date. 	<ul style="list-style-type: none"> Contractor ECO EO 	<ul style="list-style-type: none"> On-going during the construction phase

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
organism in the port	nuisance from operating construction equipment.		<p>any unacceptable increases in noise</p> <ul style="list-style-type: none"> Noise associated with the construction activities can be mitigated by limiting the construction operation to business hours. The project team must endeavour to keep noise generating activities associated with construction to a minimum at all times. Any complaints pertaining to noise must be recorded and reported to the ECO and addressed accordingly. Labourers to be provided with hearing protection as and when required. The requirements of the the Western Cape Noise Control Regulations (Provincial Notice 200/2013) of 20 June 2013 must be adhered to. 				

10.22 VISUAL IMPACT

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
-----------------	-----------	--------------------------------	--------------------------------	-----------------------	---------------------	-------------------	----------------------

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> Loss of sense of place. 	<ul style="list-style-type: none"> To ensure proper mitigation of potential visual impacts. To maintain the site's aesthetics. 	<ul style="list-style-type: none"> NEMA 	<ul style="list-style-type: none"> Top soil excavated (if any) must not be stockpiled above 2m. All temporary structures erected on site for the purposes of the project's construction phase will be removed from site upon completion of the project. The site must be clean and tidy at all times. 	<ul style="list-style-type: none"> Clean and tidy site. No complaints from the landowners and affected parties. 	<ul style="list-style-type: none"> Observation Complaints register 	<ul style="list-style-type: none"> ECO Contractor EO 	On-going during the construction phase.

10.23 TRAFFIC IMPACT

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> Possible traffic increase Car accident Irregular traffic pattern during construction phase. Impact on road 	<ul style="list-style-type: none"> To maximise road safety, and minimise congestion To ensure that traffic impacts as a 	<ul style="list-style-type: none"> NLTA 	<ul style="list-style-type: none"> A Traffic Management Method Statement must be prepared and adhered to throughout the construction phase. Effective traffic control must take place throughout the construction phase. Access roads will be maintained by the Contractor and will ensure that access 	<ul style="list-style-type: none"> No increase in accident rate No complaints from the landowners and affected 	<ul style="list-style-type: none"> Observation Complaints report 	<ul style="list-style-type: none"> Contractor / ECO EO 	On-going during the construction phase

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
safety, congestion, wear and tear of the road surface.	result of the construction related activities are minimized.		<p>roads to the site are of a suitable quality to eliminate soil erosion and channel storm water.</p> <ul style="list-style-type: none"> Adherence to traffic regulations must be monitored. The Contractor must monitor drivers for use of alcohol and other substances that could impair judgment and driving. Ensure that loads on trucks are properly secured during transport. Schedule arrival and departure of heavy vehicles to avoid morning and afternoon peak hours. 	parties			

10.24 EXCAVATION, BACKFILLING AND TRENCHING

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> Possible erosion Injury of animal life 	<ul style="list-style-type: none"> To prevent erosion. To ensure safety for 	<ul style="list-style-type: none"> OHSA APA 	<p>While working at areas prone to erosion the following must be adhered to:</p> <ul style="list-style-type: none"> Excavations must be barricaded/ fenced off at all times. 	<ul style="list-style-type: none"> No incidence of animals trapped in trenches 	<ul style="list-style-type: none"> Observation Incident report 	<ul style="list-style-type: none"> Contractor / ECO EO 	On-going excavations

	both human and animals.		<ul style="list-style-type: none"> For informal storm water retention ponds to be excavated in natural areas: top soil must be kept separate and is to be re-applied once the informal ponds have been excavated. 	reported			
--	-------------------------	--	--	----------	--	--	--

10.25 EROSION AND CONTROL

Possible Impact	Objective	Applicable Legislation /Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> Impact on soils and habitats and sensitive environs. Rehabilitation of erosion-prone areas by repairing erosion runnels and re-vegetating where possible (The impact 	<ul style="list-style-type: none"> To prevent erosion and sedimentation. 	<ul style="list-style-type: none"> NWA CARA 	<p>To prevent any form of erosion the following must be adhered to:</p> <ul style="list-style-type: none"> Use species that are specific to the original vegetation type of the affected area for the re-vegetation of erosion runnels. During construction, the Contractor must protect areas susceptible to erosion by installing necessary temporary and / or permanent drainage and by taking suitable measures to prevent surface water concentration into nearby roadways. Prior to construction, all topsoil must be stripped and stockpiled separately from 	<ul style="list-style-type: none"> No visible signs of erosion. 	<ul style="list-style-type: none"> Observation Complaints register 	<ul style="list-style-type: none"> Contractor ECO EO 	On-going particularly during excavations

Possible Impact	Objective	Applicable Legislation /Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
is positive provided that indigenous vegetation appropriate for the local vegetation type is used for the rehabilitation)			<p>subsoil and rocky material. Soil must be stripped in a phased manner so as to retain vegetation cover for as long as possible.</p> <ul style="list-style-type: none"> • Stockpiled topsoil must not be compacted and shall be used during rehabilitation. <p>Stockpiled soil must be protected by erosion-control berms if exposed for a period of greater than 14 days during the wet/windy season.</p> <ul style="list-style-type: none"> • If topsoil will be stockpiled for a longer period, it must be either vegetated with indigenous grasses or covered with a suitable material to prevent erosion and invasion by weeds • Soil stockpiles must not be contaminated with oil, diesel, petrol, waste or any other foreign matter, which may inhibit the later growth of vegetation and micro-organisms in the soil. • Soil must not be stockpiled on drainage 				

Possible Impact	Objective	Applicable Legislation /Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			<p>lines or near watercourses.</p> <ul style="list-style-type: none"> • Sensitive areas must be cordoned off to control vehicles and construction personnel access. • Any roads along slopes must have water diversion structures placed at regular intervals to ensure that they do not capture overland flow and become eroded. 				

10.26 USE OF CEMENT AND CONCRETE

Possible Impact	Objective	Applicable Legislation/P olicy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> • Soil, surface and ground water pollution. 	<ul style="list-style-type: none"> • To conserve soils, surface and groundwater. • To 	<ul style="list-style-type: none"> • NEMA • NEMWA • HSA 	<p>Cement is regarded as highly hazardous to the natural environment due to its high pH and the chemicals contained therein. To avoid ground pollution the following must be implemented:</p> <ul style="list-style-type: none"> • Pre-mix shall be the preferred option where possible. 	<ul style="list-style-type: none"> • Areas of construction are clear of all concrete residue/waste following construction. 	<ul style="list-style-type: none"> • Observation • Site Plan 	<ul style="list-style-type: none"> • Contractor • ECO • EO 	<p>Throughout the construction phase</p>

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	minimise waste concrete from polluting the environment		<p>If concrete mixing is undertaken on site, the following measures must be put in place:</p> <ul style="list-style-type: none"> • The batching / mixing area must be properly designated, indicated on the site plan and kept neat and tidy at all times. • No batching / mixing activities will occur on a permeable surface. • The visible remains of the batch plant and concrete, either solid, or from washings shall be physically removed and disposed of appropriately at a licensed landfill site. 				

10.27 SITE CLEAN-UP AND REHABILITATION

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> • Erosion • Spread of alien 	<ul style="list-style-type: none"> • Minimise damage to topsoil and 	<ul style="list-style-type: none"> • NEMBA • NEMA 	<ul style="list-style-type: none"> • The Contractor shall ensure that all temporary structures, materials, waste and facilities used for 	<ul style="list-style-type: none"> • No loss of topsoil due to construction 	<ul style="list-style-type: none"> • Rehabilitation Plan • Observation 	<ul style="list-style-type: none"> • ECO • EO • Contractor 	On completion of construction

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
invasive plant species	environment at tower positions <ul style="list-style-type: none"> • Successful rehabilitation of all damaged areas • Prevention of erosion. • To ensure that the site is fully rehabilitated to its original state. • To ensure that the site is clean and neat. 		construction activities are removed upon completion of the project. <ul style="list-style-type: none"> • The Contractor must fully rehabilitate all disturbed areas to the satisfaction of the ECO. • All replaced equipment and excess gravel, stone, concrete, bricks, temporary fencing and the like must be removed from the site upon completion of the works. • No discarded materials of any nature shall be buried on the site or on any other land within the site. • Re-seeding shall be done on disturbed areas as per the rehabilitation Method Statement and as directed by the Contractor's EO and ECO. 	activities <ul style="list-style-type: none"> • All disturbed areas successfully rehabilitated within three months of completion of the contract • No visible erosion scars three months after completion of the contract • No open fires shall be allowed on site under any circumstance • No evidence 			Random surveys by landowner

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	<ul style="list-style-type: none"> Minimize claims and litigation from landowner 			<ul style="list-style-type: none"> of rubble or litter left on site. Successful completion of the contract with landowner signing the release form six months after completion of the project. 			

10.28 INFRASTRUCTURE

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> Damage to fence, gates and 	<ul style="list-style-type: none"> Minimise damage to infrastructure 	Fencing Act (Act 31 of 1963)	<ul style="list-style-type: none"> The Contractor must ensure that all gates are left in the state as required by the landowner 	<ul style="list-style-type: none"> No complaints from the 	<ul style="list-style-type: none"> Complaints register Observation 	<ul style="list-style-type: none"> ECO EO Contractor 	<ul style="list-style-type: none"> During construction and

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
other services • Loss of livestock	e such as fence, gates. • Prevent loss of livestock • Minimize claims and litigation from landowners		(Transnet).	landowners with regards to broken fences and gates. • All gates closed during the construction phase.			completion of construction • Random surveys landowner

10.29 MONITORING OF EMPR COMPLIANCE

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
To implement an on-going monitoring and performance audit programme.	<ul style="list-style-type: none"> The correct and successful implementation of impact mitigation measures in order to reduce adverse impacts on environmental aspects needs to be ensured by a proper monitoring program. Monitoring of the general implementation of/adherence to the EMPr shall be the responsibility of the ECO. Reporting on adherence/compliance to 	<ul style="list-style-type: none"> Observation Checklist Daily Register Attendance Registers Photographic evidence Audit and Monitoring Reports 	<ul style="list-style-type: none"> Contractor SHEQ 	On-going post rehabilitation.

	<p>stipulations as communicated to Contractors, shall take place during scheduled site meetings.</p> <ul style="list-style-type: none"> • Regular site meetings by the project team. • Continuous induction of staff and visitors on the EMPr conditions and requirements. • Put in place non-conformance, prevention and corrective procedures. • Monitoring of leakage/spillages from the waste water facility 			
--	--	--	--	--

10.30 DOCUMENT CONTROL

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> • To ensure compliance with the requirements of the regulatory authority • To assign roles and responsibilities to ensure compliance • To implement and comply with the requirements of the EMPr. 	<ul style="list-style-type: none"> • A copy of the EMPr and the EA shall be made available on site at all times. • The EMPr as well as the EA shall be used for referral as the project progresses. The EA shall also be presented on request to I&APs and stakeholders who may visit the site. • Monitoring and Audit Reports shall be submitted to DEA and copies filed; proof of submission shall be retained. 	<ul style="list-style-type: none"> • Availability of an EMPr copy on site • Report submission Transmittal 	<ul style="list-style-type: none"> • Contractor • ECO 	<p>On-going during the construction phase.</p>

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency

11 OPERATION MANAGEMENT PROGRAMME

This section provides the description of the possible impacts and its mitigation measures associated with the operational phase.

Possible Impact	Objectives	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
<ul style="list-style-type: none"> Waste generation during the operation phase will have a negative impact on the environment, if not controlled adequately. 	<ul style="list-style-type: none"> To prevent ecological damage. Minimise damage to the identified watercourses. Reduce the deaths of birds caused by collision and electrocution. To prevent littering on site by storing waste appropriately. Prevent loss of life of 	NEMA NWA NEMWA NEMBA OHSA	<p>11.1.1 Waste Management</p> <ul style="list-style-type: none"> Disposal of waste must be in accordance with relevant legislative requirements. <p>11.1.2 Health and Safety</p> <ul style="list-style-type: none"> Safety and security issues must be addressed as a priority in accordance with Transnet's policies. <p>11.1.3 Storm water systems and retention ponds</p> <ul style="list-style-type: none"> Ensure the diversion of contaminated storm water away from remaining natural areas Ensure the prevention of fauna and humans falling into the ponds which may result in 	No complaints from the land owners.	<ul style="list-style-type: none"> Complaints register Observation 	<ul style="list-style-type: none"> Environmental Manager SHEQ Officer 	Weekly

Possible Impact	Objectives	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	<p>people and livestock due to electrocution.</p>		<p>injuries and drowning</p> <ul style="list-style-type: none"> • Maintenance and management activities during the operational phase will include the cleaning of all storm water inlets, manholes and pipes; • Removal of dust and caked material from retention ponds, infiltration trenches and channels; • Repairing of storm water pipes and infrastructure when required is part of the maintenance and management. • The containment of contaminated storm water run-off into the marine system. <p>11.1.4 Waste water treatment facility</p> <ul style="list-style-type: none"> • The system for the treatment of the wastewater and effluent production must ensure minimization of leakages of 				

Possible Impact	Objectives	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			<p>wastewater to groundwater</p> <ul style="list-style-type: none"> • Avoid the direct discharges of wastewater into the sea. Should there be a need for discharge into the sea; relevant permits must be obtained from the Department of Environmental Affairs Oceans and Coasts prior to discharge activities. • Avoid the overflow of the waste water from the treatment facility which may cause environmental contamination • The system for the sludge production must ensure minimization of leakages of sludge to groundwater (connections between pipes and tanks should be water-tight); • Avoid the generation of large quantities of sludge that will affect soil, water, and air quality 				

Possible Impact	Objectives	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			<ul style="list-style-type: none"> • Application of good waste management practices • Prevent leakages and infiltration of leachate from the sludge with hazardous substances disposed at the waste water treatment facility • Ensure that the waste water treatment facility complies with the water quality standards set by DWS <p>11.1.5 Air quality</p> <ul style="list-style-type: none"> • Management of emission of volatile organic compounds that are present in waste water which may find their way through to the atmosphere and affect air quality 				

12 GENERIC CONDITIONS

In order to ensure compliance with Transnet's environmental policy as well as environmental legislation requirements, the following generic conditions are applicable:

12.1 SITE DOCUMENTATION/MONITORING

The standard Transnet site documentation shall be used to keep records on site. All documents shall be kept on site and be available for monitoring and auditing purposes. Site inspections by an Environmental Audit Team may require access to this documentation for auditing purposes. The documentation shall be signed by all parties to ensure that such documents are legitimate. Regular monitoring of all site works during construction by the ECO is imperative to ensure that all problems encountered are resolved punctually and amicably. Regular monitoring shall continue during the operational phase and it shall be the responsibility of Transnet Environmental and SHEQ officer.

Environmental Monitoring reports during construction shall be submitted to the appointed Transnet EO by the Contractor's EO with all information relating to environmental matters. The following Key Performance Indicators must be reported on:

- Environmental incidents, such as oil spills, concrete spills, etc. and actions taken (litigation excluded).
- Incidents possibly leading to litigation and legal contraventions.
- Environmental damage relating to the project.

The following documentation shall be kept on site:

- Physical access plan.
- Complaints register.
- Daily Site diary.
- Records of all remediation / rehabilitation activities.
- Copy of the EMPr and EA.

The ECO shall prepare monthly Environmental Monitoring reports at intervals as specified in the EA which will cover the activities undertaken as well as the status of compliance on site. Copies of the reports shall be submitted to Transnet, as well as the DEA. Furthermore, reports will be kept on site either as hard or soft copy.

12.2 AUDITS

Audits shall be undertaken in accordance with the requirement of Appendix 7 of the EIA Regulations of December 2014 as amended.

During the construction period at least monthly Environmental Audits shall be conducted by the ECO to determine compliance with the recommendations of the EMPr and conditions of the EA.

The appointed ECO, as well as the contractors on site, are responsible for ensuring compliance with the EMPr. It is recommended that monthly environmental compliance reports are compiled by the ECO and submitted to Transnet for correction of non-compliance issues. It is the responsibility of the ECO to report any non-conformance, which is not correctly rectified to the DEA.

12.3 ACCESS TO DOCUMENTS

Interested and Affected Parties must be allowed access to the EMPr document should they so wish. They have the right to monitor specific aspects of the Construction and Operation EMPr in conjunction with the ECO and Contractor in a reasonable and informal manner, without unreasonably disrupting construction activities.

12.4 SOCIO-CULTURAL ISSUES

- A plan of action must be drawn up in the case of an emergency
- Property owner must be treated with respect and courtesy at all times;
- The culture and lifestyles of the communities living in close proximity to the proposed development must be respected;
- Vehicles must be driven carefully in hazardous road conditions (sharp bends, narrow roads, bad weather, children playing on or near the road, domestic animals on or near the road etc.). Vehicle movement must be kept to a minimum during rain to avoid damage to the access road;
- Environmental clauses (as referred to in this EMPr) must be included into contract documents for all contractors;
- Any archaeological sites and sites of historical interest are to be treated with respect and protected.
- No firewood is to be collected except with the written consent of the landowner; and
- A register must be maintained of all complaints or queries received as well as action taken.