EMPR : REHABILITATION OF THE OLD TUG JETTY SHEET PILE WALL AT THE PORT OF PORT ELIZABETH

PROJECT NAME:

THE PROPOSED REHABILITATION OF THE OLD TUG JETTY SHEET PILE WALL AT THE PORT OF PORT ELIZABETH, WITHIN NELSON MANDELA BAY METROPOLITAN MUNICIPALITY IN THE EASTERN CAPE PROVINCE

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1. INTRODUCTION

1.1. BACKGROUND INFORMATION

The Port of Port Elizabeth is located at the southern end of Algoa Bay, which is one of the many half-heart Bays along the south coast at Latitude 33° 57' 58" S and Longitude 25° 37' 60" E (**Figure *1***). The Port of Port Elizabeth is an established port in the central region, comprising of a container terminal, the tanker berth, multi-purpose terminal and the manganese terminal. The port also supports fishing related activities for birthing, ship repair as well as leisure vessels.

The port is protected by the 1.1 km South Breakwater and the Charl Malan Quay and the entrance channel is 14.10 m with the width of 3210 metres wide. The port essentially comprises three basins, namely the northern, southern and turning basins, and an entrance channel. The northern and southern basins are separated by the Citrus Terminal, the eastern most point of which is taken as defining the northern basin from the turning basin, while an imaginary line extending between the Citrus Terminal and the Tanker Berth is taken as defining the southern basin from the turning basin.

The port handles over 11 million tonnes of cargo per year (approximately 950 commercial cargo vessel calls), with the 30-year forecast predicting volumes to increase to over 18 million tonnes per year. The import and export activities, demand for the ship repair facility as well as repair and maintenance activities are exacting a heavy toll on the port infrastructure. As a result, the Port experience various infrastructural challenges which include among others damage on sea walls, underpinning, and sand accumulation on the western end of the breakwater and fence area bordering the Port. Additionally, the harsh marine environment has a negative corrosive and chemical reactive effect upon various structures, infrastructure and facilities within the Port. Regular maintenance activities are therefore required to counter the afore-mentioned effects. Most equipment pivotal to sustain port business and services is old and require replacement (Transnet, 2017).

The Jetty was constructed in the mid 1970's and comprises of steel interlocking 'U' steel sheet pile sections together with dead man anchors and a concrete capping beam. The extent of the site is 246 m with an advertised berth depth of -4 m CD (Chart Datum). Both structures extend into the seawaters by 6 m each, total extension of 12 m (width) from the existing structures and the site extents are 246 m (length), hence, the development footprint of the port or harbour will be increased or expanded by approximately 2500 square metres in total. The quay wall is currently being used for the berthing of fishing vessels and trawlers. The northern extent of the back of quay area is used for the transshipment of cargo and supplies, while the southern extent is used for boat maintenance.

Several listed activities are triggered by the proposed development and as such Environmental Authorisation is required prior to commencement of the activities detailed in **Table *4***. Abantu Environmental Consultants (AEC) has been appointed as the independent environmental assessment practitioners to facilitate the EIA process and obtain the relevant authorisations. The Environmental Authorisation application is subject to a Full Scoping and Environmental Impact Assessment (EIA) Process and will be adjudicated by the identified competent authority, Department of Forestry, Fisheries and Environment (DFFE).

This EMPr is prepared in accordance with the requirements of Appendix 4 of the Environmental Impact Assessment Regulations, 2014, as part of the National Environmental Management Act (NEMA- Act 107 of 1998).

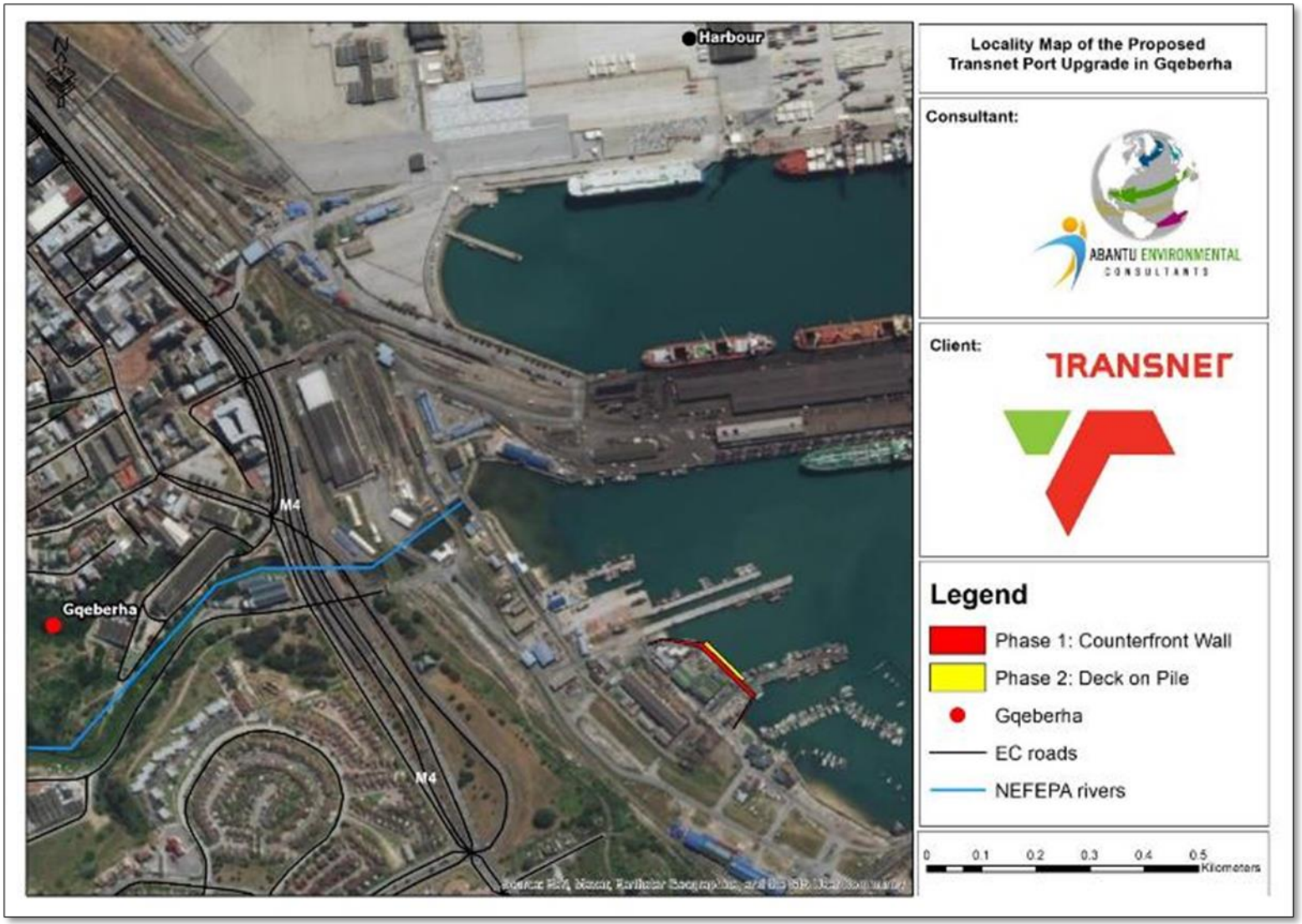


Figure 1: Location of proposed activity

1.2. OBJECTIVES OF AN EMPR

This EMPr has been compiled to provide recommendations and guidelines according to which compliance monitoring should be done during the construction and operation of the Old Tug Jetty Sheet Pile Wall. The objective of the EMPr is also to ensure that all relevant factors are considered to ensure environmentally responsible development. The purpose of the EMPr is to provide specifications for "good environmental practice" for application during these phases.

The aim is to ensure that Transnet takes reasonable measures to protect the environment and to remedy impacts to the environment as required by the Duty of Care principle as stated in Section 28 of the National Environmental Management Act, 107 of 1998, as amended (NEMA). The EMPr also takes specific recognition of the monitoring, auditing and corrective actions needed when activities are undertaken under this EMPr.

Compliance with the environmental management requirements of this EMPr is compulsory for all Transnet personnel and representatives, contractors and sub-contractors that may be involved with the construction and operation of the sheet pile wall. All parties should note that obligations imposed by the EMPr are legally binding in terms of the environmental authorisation granted by the relevant environmental permitting authority.

Therefore, the objectives of an EMPr are to:

- Ensure compliance with regulatory authority stipulations and guidelines which may be local, provincial, and/or international;
- Ensure that there is sufficient allocation of resources on the project budget so that the scale of EMPr related activities is consistent with the significance of project impacts;
- Verify environmental performance through information on impacts as they occur;
- Respond to unforeseen events;
- Provide feedback for continual improvement in environmental performance;
- Identify a range of mitigation measures which could reduce and mitigate the potential impacts to minimal or insignificant levels;
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project;
- Identify measures that could optimize beneficial impacts;
- Create management structures that address the concerns and complaints of I&APs with regards to the development;
- Establish a method of monitoring and auditing environmental management practices during all phases of the activity;
- Ensure that safety recommendations are complied with; and
- Specify time periods within which the measures contemplated in the final environmental management programme must be implemented, where appropriate.
- Avoid, minimize or correct the disturbance of ecosystems and loss of biodiversity;
- Avoid, minimize or correct pollution and degradation of the environment;
- Avoid or minimize waste, to reuse or recycle waste where possible and to dispose of waste in a responsible manner;

- Apply a risk-averse and cautious approach; and
- Anticipate and prevent negative impacts on the environment and on people's environmental rights. Where impacts cannot be prevented, such impacts must be minimized and mitigated.

1.3. STRUCTURE AND FUNCTION OF THE EMPR

An EMPr is focused on sound environmental management practices, which will be undertaken to minimise adverse impacts on the environment through the lifetime of a development. In addition, an EMPr identifies what measures will be in place or will be actioned to manage any incidents and emergencies that may occur during operation of the project.

As such the EMPr provides specifications that must be adhered to in order to minimise adverse environmental impacts associated with the construction and operation of the Old Tug Jetty Sheet Pile Wall. The content of the EMPr is consistent with the requirements as set out in Appendix 4 of the EIA regulations stated below, for the construction and operation phases.

Table 1: Requirements of an EMPr in terms of Appendix 4 Item No.1.1 of the EIA Regulations

Required content of EMPr	Relevant section in report
(a) Details of – **(i) The EAP who prepared the environmental management programme; and** **(ii) The expertise of the EAP to prepare an environmental management programme, including a curriculum vitae;**	Section 2
(b) A detailed description of the aspects of the activity that are covered by the environmental management programme as identified by the project description;	Section 3
(c) A map at an appropriate sale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Section 10
(d) Information on any proposed management or mitigation measures that will be taken to address the environmental impacts that have been identified in a report contemplated by these Regulations, including environmental impacts or objectives in respect of – **(i) Planning and design;** **(ii) Pre-construction;** **(iii) construction activities;** **(iv) Rehabilitation of the environment after construction and where applicable post closure;** **And (v) where relevant, operation activities;**	Section 8
(e) a description and identification of impact outcomes required for the aspects contemplated in (d).	Section 7

Required content of EMPr	Relevant section in report
(f) a description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable include actions to – **(i) Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;** **(ii) Comply with any prescribed environmental management standards or practices;** **(iii) Comply with any applicable provisions of the Act regarding closure, where applicable;** **(iv) Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;**	Section 8
(g) The method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 9
(i) An indication of the persons who will be responsible for the implementation of the impact management actions;	Section 9
(j) The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 9
(k) The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 9
(l) A program for reporting on compliance, taking into account the requirement as prescribed by the regulations;	Section
(m) An environmental awareness plan describing the manner in which – **(i) The applicant intends to inform his or her employees of any environmental risk which may result from their work; and** **(ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment; and**	Section 7.2.21
(n) Any specific information that may be required by the competent authority	

1.4. LEGAL REQUIREMENTS

1.4.1. APPLICABLE ENVIRONMENTAL LEGISLATION

The legal compliance obligation for this project stems from the need for an EA to be granted by the competent authority, DFFE, in accordance with the requirements of the NEMA. In addition, there are numerous other pieces of legislation governed by many acts, regulations, standards, guidelines on a

national, provincial, and local level, which should be considered in order to assess the potential applicability of these for the proposed project.

Transnet will ensure that all relevant environmental legislation is complied with during construction and operation of the Old Tug Jetty sheet pile wall. This will include ensuring:

- The principles as outlined in section 2 of NEMA are implemented as and where applicable;
- Responsible waste management including measures to avoid or reduce waste generation, encouraging re-use, ensure appropriate disposal and prevent littering; and
- Disturbance of marine life is avoided.

Table 2: Applicable key legislation

Legislation and guidelines	Description	Legal requirement for this project
The Constitution of South Africa, 1996 (Act No.108 of 1996)	The Constitution is the highest and the supreme law in South Africa. The Bill of Rights in chapter 2 section 24 of the Constitution of South Africa Act (Act 108 of 1996) makes provisions for environmental issues and declares that: "Everyone has the right – a) to an environment that is not harmful to their health or well-being; and b) to have the environment protected, for the benefit of present and future c) generations, through reasonable legislative and other measures that: i. prevent pollution and ecological degradation; ii. promote conservation; and iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development".	The applicant has an obligation to ensure that the project is undertaken in a manner that respects and protects the constitutional rights of all interested and affected parties. The applicant must ensure that the project environment is not harmful and that measures are implemented to prevent pollution so that future generations can enjoy the social and ecological benefits.
National Environmental Management Act, 1998 (Act No.107 of 1998) as amended	The National Environmental Management Act, 1998 (Act No.107 of 1998) (NEMA) is a 'principles based Act' and is an overarching statute regulating various aspects of natural resources use, integrated environmental management and pollution control. The Act provides for the right to an environment that is not harmful to the health and wellbeing of the South African people; sustainable development, environmental	The applicant must ensure that construction and operation of activities must be conducted according to the generally accepted principles of sustainable development, integrating social, economic, and environmental factors.

Legislation and guidelines	Description	Legal requirement for this project
	protection, equitable distribution of natural resources; and the formulation of environmental management frameworks. Its definition of the environment includes the land and water of the earth, microorganisms, plant and animal life or a combination of those things, and the inter relationships among them. The Act aims to provide for cooperative environmental governance by establishing principles for decision making on matters affecting the environment, institutions that will promote co-operative governance, and procedures for coordinating environmental functions exercised by organs of state. Section 24 Provides for the prohibition, restriction and control of activities which are likely to have a detrimental effect on the environment.	An application for Environmental Authorisation has been submitted on behalf of the client in line with the requirements of NEMA since the proposed project will trigger listed activities which require authorization prior to commencement. As part of the EIA process, mitigation measures have been proposed to ensure that the significance of the predicted impacts is reduced thus protecting the environment from degradation.
Environmental Impact Assessment Regulation, 2014 as Amended	The Environmental Impact Assessment (EIA) Regulations promulgated under NEMA in 2014 provide a list of activities which are subject to an Environmental Authorisation (EA) process prior to construction or implementation. In accordance with the 2014 EIA Regulations, (as amended) an EIA process is required owing to the applicability of the activities listed in **Error! Reference source not found.**. According to the NEMA Regulations these activities may not commence without environmental authorization from the competent authority which requires the investigation, assessment and statement of potential impact of activities and must follow the procedure as described in the EIA Regulations.	An application for Environmental Authorisation has been submitted on behalf of the client in line with the requirements of NEMA EIA Regulations since the proposed project will trigger listed activities which require authorization prior to commencement

Legislation and guidelines	Description	Legal requirement for this project
National Environmental Management Biodiversity Act (Act No. 10 of 2004)	The National Environmental Management: Biodiversity Act (NEM:BA) makes provisions for achieving the objectives of the United Nation's Convention on Biological Diversity, to which South Africa is a signatory. The Bill promotes management, conservation and sustainable use of indigenous biological resources, and provides for: • the management and conservation of biological diversity; • the use of indigenous biological resources in a sustainable manner; and • the fair and equitable sharing of benefits arising from the commercialization through bio-prospecting of traditional uses and knowledge of generic resources. The Bill gives effect to international agreements relating to biodiversity which are binding on the Republic and provides for co-operative governance in biodiversity management and conservation and provides for a National Biodiversity Institute to assist in achieving the above objectives. The Act gives wide powers to the National Biodiversity Institute to inter alia protect flora and fauna in appropriate enclosures, the collection of information, undertaking and promotion of research on indigenous biodiversity and the sustainable use of indigenous	The proposed project falls within an area identified as a Critical Biodiversity Area (CBA) according to the Eastern Cape Biodiversity Conservation Plan (ECBCP) as well as the NMBMM Bioregional Plan. The applicant through the EIA process will verify the validity of this categorization in light of the transformed nature of the site and then ensure that areas that remain natural within the CBA are kept as intact as possible. The applicant and its appointed contractor has the responsibility to prevent the establishment of alien vegetation within the site and where it has established, ensure that alien plants are eradicated promptly.

Legislation and guidelines	Description	Legal requirement for this project
	biological resources, the prevention, control or eradication of listed invasive species, biodiversity planning and other functions. This act lists all critically endangered, vulnerable and protected species. The potential occurrence of any such species will be investigated in the BA process.	
National Environmental Management: Integrated Coastal Management Act	The National Environmental Management Integrated Coastal Management Act (No.24 of 2008) [NEM:ICMA] aims to establish a system of integrated coastal and estuarine management and to ensure that development within the coastal zone is socially and economically justifiable and ecologically sustainable. In order to minimise or mitigate negative environmental impacts, the NEM:ICMA refers to the NEMA provisions for the need to obtain environmental authorisations prior to undertaking certain listed activities. Any of the listed activities that are conducted in the coastal zone will require and environmental authorisation in terms of NEMA. In addition to the NEMA requirements and criteria for environmental authorisations, the NEM:ICMA provides for additional criteria that must be considered by the relevant competent authority when evaluating an application for an activity which will take place in the coastal zone	The proposed project will take place within the coastal zone. Listed activities which include dredging and infilling of material into the sea will be triggered thus the DFFE Oceans and Coasts Department has been identified as competent authority has been identified for handing the Dredging permit application along with Integrated Environmental Authorisations section. The National Environmental Management Act: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008) governs the open water disposal of dredged material. The open water disposal of dredged material requires a permit from the Department of Forestry, Fisheries and the Environment. The permitting procedure is in accordance with the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter of 1972 (the London Convention) and 1996 Protocol thereto, to which South Africa is a signatory. To comply with the Act, Transnet National Ports Authority annually makes an application to the

Legislation and guidelines	Description	Legal requirement for this project
		Department to dispose sediment maintenance dredged in the Port of Port Elizabeth at a registered open water disposal site in Algoa Bay (CSIR,2019).
National Water Act, 1998 (Act No.36 of 1998)	In terms of chapter 3 section 12-20, water resources are to be protected, used, developed, conserved, managed and controlled. This Act recognizes that water is a scarce resource; it is a natural resource that belongs to all of South Africa's people. The National Department of Water and Sanitation is responsible for the nation's water resource and also the Minister of Department of Water and Sanitation ensures that the water resource is "protected, used, developed, conserved, managed and controlled" through the implementation of this Act (National Water Act 36 of 1998). This Act makes provisions for the protection of surface water and groundwater resources and their sustainable management for the prevention and remediation of the effects of pollution, and for the control of emergency occurrences. Section 21 of the National Water Act (NWA) lists water uses for which a Water Use Licence will be required.	The proposed project is located within 100m of a river and within 500m of a wetland. Confirmation has been received from DWS that Section 21 (c) and (i) is not applicable in the proposed project since it will take place within the marine environment.
National Environmental Management: Air	The objective of the Act is to protect the environment by providing reasonable measures for the protection and enhancement of air quality and to prevent air pollution. The Act makes provision for measures to control dust, and offensive	The EMPr has been compiled during the EIA phase includes measures for control of dust during the construction phase, If there are any exceedances observed in terms of the National Dust Regulations

Legislation and guidelines	Description	Legal requirement for this project
Quality Act, 2004 (Act No.39 of 2004)	odours. Section 32 of The National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) deals with dust control measures regarding dust control. 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 or other measures aimed at controlling dust. The National Dust Control Regulations (2013) provides for the management and monitoring of dust.	then a dust monitoring programme must be submitted to the competent authority.
National Environmental Management: Protected Areas Act (Act No. 57 Of 2003)	The purpose of the National Environmental Management: Protected Areas Amendment Act (NEMPAA) is to provide for the protection and conservation of ecologically sensitive areas representative of South Africa's biological diversity and its natural landscapes and seascapes. The objectives of NEMPAA are: (a) To provide, within the framework of national legislation, including the National Environmental Management Act, for the declaration and management of protected areas; (b) To provide for co-operative governance in the declaration and management of protected areas;	The proposed project is located within 5km of a Formal Protected Area. The identified management authorities have been included in this project as interested and affected parties (IAPs).

Legislation and guidelines	Description	Legal requirement for this project
	(c) To effect a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity; (d) To provide for a representative network of protected areas on state land, private land and communal land; (e) To promote sustainable utilisation of protected areas for the benefit of people, in a manner that would preserve the ecological character of such areas; (f) To promote participation of local communities in the management of protected areas, where appropriate; and (g) To provide for the continued existence of South African National Parks.	
Occupational Health and Safety Act, 1993 (Act No.85 of 1993)	The Occupational Health and Safety Act make provisions in regulations Section 8 for the general duties of employers to their employees. The act provides for the health and safety of people at work utilising machinery and the protection of others against health and safety risks associated with activities on site/work. General Administrative Regulations (2003) describe the administration of the various OHS Regulations, including the designation of health and safety committees, the reporting and recording of incidents and occupational diseases. This Act is	The applicant must ensure that a safe working environment is provided for its employees during construction and operational phases of the project. This includes obtaining the relevant work permits, providing PPE and ensuring all required facilities are available for a working environment that is conducive. All stalls must have adequate training for their various duties and the applicant must ensure that compliance with the OHSA and Construction Regulations is monitored on a regular basis.

Legislation and guidelines	Description	Legal requirement for this project
	applicable to all contractors during the planning, construction and operational phases of the project. To provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work.	
Hazardous Substance Act (No 15 of 1973)	This Act regulates the control of substances that may cause injury, or ill health, or death due to their toxic, corrosive, irritant, strongly sensitizing or inflammable nature of the generation of pressure thereby in certain instances and for the control of certain electronic products. To provide for the rating of such substances or products about the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products. • Group I and II: Any substance or mixture of a substance that might by reason of its toxic, corrosive, etc., nature or because it generates pressure through decomposition, heat, or other means, cause extreme risk of injury etc., can be declared as Group I or Group II substance • Group IV: any electronic product; and • Group V: any radioactive material. The use, conveyance, or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force. It is necessary to identify and	Relevant permits must be obtained for the storage of hazardous substances if any will be stored on site during construction. The contractor must ensure that hazardous substances are stored in a safe manner and MSDS are retained on file for all hazardous substances on site.

Legislation and guidelines	Description	Legal requirement for this project
	list all the Group I, II, III, and IV hazardous substances that may be on the site and in what operational context they are used, stored, or handled. If applicable, a license is required to be obtained from the	
National Environmental Management: Waste Act, 2008 (Act No.59 of 2008)	During construction waste will be produced, in either liquid, solid and/or hazardous state, and this waste will be required to be adequately and appropriately disposed of. There are several Regulations or Acts that are applicable to the proposed development in terms of waste management. 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 provide for matters connected therewith.	No authorization is required in terms of NEMWA, however, the applicant must make sure that waste is managed appropriately on site. This includes separation of waste, routine cleanup of the site and spillages as well as disposal at appropriately licensed waste landfills. Where possible, waste should be recycled to minimizes volumes of waste disposed to landfills

Legislation and guidelines	Description	Legal requirement for this project
National Heritage Resources Act (Act No. 25 of 1999)	The protection of archaeological and paleontological resources is the responsibility of a provincial heritage resources authority and all archaeological objects, paleontological material and meteorites are the property of the State. "Any person who discovers archaeological or paleontological objects or material or a meteorite in the course of development must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority". According to Section 34 of NHRA, No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority. Section 38 Listed Activities: (a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length; (b) the construction of a bridge or similar structure exceeding 50 m in length; (c) any development or other activity which will change the character of a site—	The site is located within a grade II heritage site. No Heritage Structures which are older than 60 years are located within the site and therefore no heritage impact assessment has been undertaken. The ECPHRA has been identified as a stakeholder in this project and will be provided an opportunity to comment of the findings of the EIA process.

Legislation and guidelines	Description	Legal requirement for this project
	(i) exceeding 5 000 m^2 in extent; or (ii) involving three or more existing erven or subdivisions thereof; or (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority; (d) the re-zoning of a site exceeding 10 000 m2 in extent; or (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,	
National Ports Act, 2005 (Act 12 of 2005)	The objects of this Act are to- (a) promote the development of an effective and productive South African ports industry that can contribute to the economic growth and development of our country; (b) establish appropriate institutional arrangements to support the governance of ports; (c) promote and improve efficiency and performance in the management and operation of ports;	By undertaking this project which aims to ensure that the Old Tug Jetty remains operational, the applicant is fulfilling its mandate in terms of the National Ports Act.

Legislation and guidelines	Description	Legal requirement for this project
	(d) enhance transparency in the management of ports; (e) strengthen the State's capacity to- (i) separate operations from the landlord function within ports; (ii) encourage employee participation, to motivate management and workers (iii) facilitate the development of technology, information systems and managerial expertise through private sector involvement and participation; and (f) promote the development of an integrated regional production and distribution system in support of government's policies.	
Integrated Environmental Management Information Guidelines Series:	This series of guidelines was published by the Department of Environmental Affairs (DEA) and refers to various environmental aspects. Applicable guidelines in the series for the proposed project include: • Guideline 5: Companion to NEMA EIA Regulations, 2010; • Guideline 7: Public participation; and • Guideline 9: Need and desirability. Additional guidelines published in terms of the NEMA EIA Regulations, 2014 (as amended), in particular: • Guideline 3: General Guide to EIA Regulations, 2006;	These guidelines have been consulted in the compilation of this report as well as the public participation process that will be undertaken.

Legislation and guidelines	Description	Legal requirement for this project
	• Guideline 4: Public Participation in support of the EIA Regulations, 2006; and • Guideline 5: Assessment of alternatives and impacts in support of the EIA Regulations, 2006.	
Municipal Systems Act (Act 32 of 2000)	The Municipal Systems Act provides for the core principles, mechanisms and processes that are necessary to enable municipalities to provide for community participation and for the integration of all activities for the overall social and economic upliftment of communities in harmony with their local natural environment. It also states that a fundamental aspect of the new local government system is the active engagement of communities in the affairs of municipalities of which they are an integral part. The Act requires the implementation and monitoring of Integrated Development Plans, the setting of targets and key performance indicators, including environmental targets, as well as the preparation of by-laws and policies that deal with environmental issues.	The NMBMM has been included as an I&AP for this project and the municipal IDP has been consulted in compilation of this report.
OTHER RELEVANT LEGISLATION	Other legislation that may be relevant to the proposed development includes: • The Environment Conservation Act No 73 of 1989 (ECA) Noise Control Regulations, which specifically provide for regulations to be made with regard to the control of noise,	Relevant mitigation measures will be included in the project EMPr for control of noise during construction, management of alien species, minimizing visual impact as well as use of local labor during the construction phase.

Legislation and guidelines	Description	Legal requirement for this project
	vibration and shock, including prevention, acceptable levels, powers of local authorities related matters; SANS 10103 (Noise Regulations) • Provincial Nature and Environmental Conservation Ordinance (No. 19 of 1974), which lists species of special concern which require permits for removal. Schedules 1 to 4 list protected and endangered plant and animal species; • Spatial Planning and Land Use Management Act (SPLUMA) (Act 16 of 2013 – came into force on 1 July 2015) aims to provide inclusive, developmental, equitable and efficient spatial planning at the different spheres of the government. This act repeals national laws on the Removal of Restrictions Act, Physical Planning Act, Less Formal Township Planning Act and Development Facilitation Act; • National Web Based Screening Tool • Public Finance Management Act (Act 1 of 1999; PFMA); • Employment Equity Act (Act 55 of 1998; EEA); • Labour Relations Act (Act 66 of 1995; LRA); and • District and Local municipality Integrated Development Plans (IDPs) and • Spatial Development Frameworks (SDFs).	

Due consideration shall be given to the By-laws of Nelson Mandela Bay Metropolitan Municipality that may be relevant and applicable to these Projects.

The Nelson Mandela Bay Metropolitan Municipality by-laws that may be applicable to the Project are listed in below.

Table 3: Applicable By-laws

NELSON MANDELA METRO BY-LAWS	SECTION	RELATES TO
Air Pollution Control By-Law	3. Duty to take care	Any person who is wholly or partially responsible for causing air pollution or creating a risk of air pollution occurring must take all reasonable measures: a) To prevent any potential air pollution from occurring b) To mitigate and, as far as reasonable possible, to remedy any air pollution that has occurred.
	13. Emissions caused by open burning	1) Subject to subsection (4), any person who carries out open burning of any material on any land or premises is guilty of an offence, unless the prior written authorisation of the municipality which may include the imposition of further conditions which the person requesting authorisation must comply, has been granted.
	14. Prohibition – Emissions from compressed ignition powered vehicles	1) No person may drive or use, or cause to be driven or used, a compressed ignition powered vehicle that emits dark smoke.
	18. Prohibition – Emission that cause nuisance	1) No person may create or permit emissions that cause a nuisance. 2) Any person who contravenes subsection (1) commits an offence.
	22. Control of dust	1) The occupier owner of any premises must take all reasonable steps to prevent the nuisance by dust caused by any activity on such premises.
Noise Control By-Law	5. Prohibition of disturbing Noise	No person may make, produce or cause a disturbing noise, or allow it to be made, produced or caused by any person, animal, machine, device or apparatus or any combination thereof.
Public Places and Nuisances By-Law	3. Behaviour and conduct	1) No person may – a) do work on or use any premises in such a manner that it interferes with the convenience or comfort of other people or that it becomes a source of damage to any person;

NELSON MANDELA METRO BY-LAWS	SECTION	RELATES TO
		4) Any person who contravenes or fails to comply with any provisions of this section or fails to comply with any notice lawfully given there under, is guilty of an offence.
Waste Management By-Law	6. Provision of receptacles for storage of waste	1) The owner of property must provide on such property at his or her own expense a sufficient number of portable, covered receptacles of size and design approved by the municipality for the reception of the maximum quantity of waste that is likely to accumulate on the property during any period of seven days. 7) The owner or occupier of the property must ensure that any waste which is blown off the property by wind is promptly retrieved.
	11. Collection of Waste	1) A person requiring commercial services must ensure that the waste collector is registered with municipality to collect and disposed of the category of waste, and such person must take reasonable steps to ensure that the relevant waste is collected and disposed in terms of this by-law.
	18. Collection of waste	1)(3) the owner or occupier of property on which industrial or commercial waste is generated must ensure that – a) the container in which the waste is stored not be kept in a public place except as required for collection b0 such waste is kept in a secure, designated refuse area on the property; and c) the waste is collected by a registered waste collector within a reasonable time after the generation of waste
	21. Building waste	1) the owner or occupier of property on which building waste is generated must ensure that- a) until disposal, all building waste, is kept on the property on which the waste was generated; or b) a container, approved by the municipality, that maybe used for the storage, collection or disposal of building waste, subject to the provisions of any other law, be kept on the verge adjoining the property on which the waste was generated; or

NELSON MANDELA METRO BY-LAWS	SECTION	RELATES TO
		d) such building waste be removed within 14 days from completion of the construction in respect of which such waste was generated. 2) the owner or occupier of property on which building waste is generated may himself or herself dispose of the waste or must ensure that the waste is collected and disposed of by a registered waste collector. 3) All building waste must be disposed at a waste disposal facility designated for that purpose by the municipality, unless the municipality has given written consent for the building waste to be used for the purpose of land reclamation or for recycling.
	24. Dumping	1) No person may – a) except with the permission of the owner or of the person or authority having control thereof dump, accumulate, place, deposit, leave or cause or allow to be dumped, accumulated, placed, deposited or left any waste whatsoever, whether for gain or otherwise, on or in – i) a public road; ii) a public place; iii) any drain, watercourse, flood prone areas, tidal or other water in or abutting on any such road, highway, street, lane, public footway or pavement, roadside or other open space to which the public have access; or private or municipal land.
Nelson Mandela Bay Zoning Scheme: Part iii - Use Of Land And Buildings	3.15 Noxious Use	1) No Noxious Use may be established in the Use Zone Industrial 3 without the prior consent of the Council. 2) Upon the production of a certificate from the Medical Officer of Health, in consultation with the Inspector of Factories, that the process it is intended to employ in the conduct of the use will not cause nuisance or danger to health, the Council may consent to the erection and use of buildings for such Noxious Use in Use Zone Industrial 2.

1.4.2. LISTED ACTIVITIES TRIGGERED

It is anticipated that the proposed project will trigger the following listed activities:

Table 4: NEMA Listed activities triggered by the development

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended.	Describe the portion of the proposed project to which the applicable listed activity relates.
GNR 327 Activity 15	The development of structures in the coastal public property where the development footprint is bigger than 50 square metres, excluding— (i) the development of structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (ii) the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (iii) the development of temporary structures within the beach zone where such structures will be removed within 6 weeks of the commencement of development and where coral or indigenous vegetation will not be cleared; or (iv) activities listed in activity 14 in Listing Notice 2 of 2014, in which case that activity applies.	The proposed project involves construction of new structures in the coastal public property that are joined or connected to the existing Old Tug Jetty Sheet Pile Wall. Both structures extend into the seawaters by 6 m each, the total extension of 12 m (width) from the existing structures and the site extents are 246 m (length), hence, the development footprint of the port or harbour will be increased or expanded by approximately 2500 square metres in total.
GNR 327 Activity 17 (i)(iii)(v) (a)(c)(d)(e)	Development— (i)in the sea; (iii)within the littoral active zone; (v)if no development setback exists, within a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever is the greater; in respect of— (a) fixed or floating jetties and slipways; (b) tidal pools; (c) embankments;	The proposed rehabilitation of the Old Tug Jetty: • Occurs in the sea • Entails construction of a counterfort wall and deck on pile structure in front of the existing structure • The development footprint is more than 50m²

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended.	Describe the portion of the proposed project to which the applicable listed activity relates.
	(d) rock revetments or stabilising structures including stabilising walls; or (e) infrastructure or structures with a development footprint of 50 square metres or more — but excluding— (aa) the development of infrastructure and structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) the development of temporary infrastructure or structures where such structures will be removed within 6 weeks of the commencement of development and where coral or indigenous vegetation will not be cleared; or (dd) where such development occurs within an urban area.	The phase 1 counterfort wall is 259.3 m long. The cope level is at +4 m CD with the berth depth varying from -5.2 m CD along the north western face sloping up and tying into the extents of the boat ramps. Phase 2 expansion entails construction of an adjoining deck on pile structure partially supported by the counterfort wall. The deck on pile jetty is 87.3 m long with further cope line offset of 5.8 m. The cope level is at +4 m CD with a berth depth of -6.5 m CD. Both structures extend into the seawaters by 6 m each, total extension of 12 m from the existing structure. LN1 Activity 17 is included in the listed activities applied for because the proposed rehabilitation will increase the development footprint of the port by extending the structures seawards. Although the development is related to the development of a port, Activity 26 of LN2 applies because the development footprint of the port will be increased. The structure is not temporary and is designed to be robust to achieve a service life of 50 years with minimal maintenance.
GNR 327 Activity 19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres but excluding where such infilling, depositing, dredging, excavation, removal or moving— (a) will occur behind a development setback;	The proposed project consists of development and earthworks in the sea. More than 10 cubic metres of material will be removed and deposited during the construction of the proposed structures. Exclusion (a) to (d) does not apply because the development setback is not known, the project is not done for maintenance purposes, LN1 Activity

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended.	Describe the portion of the proposed project to which the applicable listed activity relates.
	(b) is for maintenance purposes undertaken in accordance with a maintenance management plan; [or] (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies; (d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or (e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.	21 does not apply and the development footprint of the port will be increased. A dredging permit application will be submitted as part of the EIA process for this project.
GNR 327 Activity 19A (i)(ii)(iii)	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from— (i) the seashore; (ii) the littoral active zone, an estuary or a distance of 100 metres inland of the highwater mark of the sea or an estuary, whichever distance is the greater; or (iii) the sea; but excluding where such infilling, depositing , dredging, excavation, removal or moving— (f)will occur behind a development setback; (g) is for maintenance purposes undertaken in accordance with a maintenance management plan; (h) falls within the ambit of activity 21 in this Notice, in which case that activity applies; (i) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or where such	The proposed project consists of development and earthworks in the sea. More than 5 cubic metres of material will be removed and deposited during the construction of the proposed structures. The proposed dredging will take place on the seashore, within the littoral active zone of the sea as well as from the sea. A dredging permit application will be submitted as part of the EIA process for this project. Exclusion (f) to (i) does not apply because the development setback is not known, the project is not done for maintenance purposes, LN1 Activity 21 does not apply and the development footprint of the port will be increased. A dredging permit application will be submitted as part of the EIA process for this project.

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended.	Describe the portion of the proposed project to which the applicable listed activity relates.
	development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.	
GNR 327 Activity 31 (i)(ii)(iv)(v) (a)(b)	The decommissioning of existing facilities, structures or infrastructure for— (i) any development and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014; (ii) any expansion and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014; (iv) any phased activity or activities for development and related operation activity or expansion or related operation activities listed in this Notice or Listing Notice 3 of 2014; or (v) any activity regardless the time the activity was commenced with, where such activity: (a) is similarly listed to an activity in (i)[,] or (ii)[, or (iii)] above; and (b) is still in operation or development is still in progress; excluding where— (aa) activity 22 of this notice applies; or (bb) the decommissioning is covered by part 8 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies.	The proposed project will involve decommissioning of the old sheet pile wall during phase 1 and partial decommissioning of the counterfort wall during phase 2. The exclusions (aa) and (bb) do not apply.
GNR 327 Activity 52	The expansion of structures in the coastal public property where the development footprint will be increased by more than 50 square metres, excluding such expansions within existing ports or harbours where there will be no increase in the development footprint of the port or harbour and excluding activities listed in	The proposed project entails the expansion of jetty (quay) by a counterfort wall and deck on pile hybrid. The site or application area is in the coastal public property. Both structures extend into the seawaters by 6 m each, the total extension of 12 m (width) from the existing structures and the site extents are

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended.	Describe the portion of the proposed project to which the applicable listed activity relates.
	activity 23 in Listing Notice 3 of 2014, in which case that activity applies.	246 m (length), hence, the development footprint of the port or harbour will be increased or expanded by approximately 2500 square metres in total.
GNR 327 Activity 54 (i)(iii)(v)(a)(b)(c)(d)(e)	The expansion of facilities— (i) in the sea; (iii) within the littoral active zone; (v) if no development setback exists, within a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever is the greater; in respect of— (a) fixed or floating jetties and slipways; (b) tidal pools; (c) embankments; (d) rock revetments or stabilising structures including stabilising walls; or (e) infrastructure or structures where the development footprint is expanded by 50 square metres or more, but excluding— (aa) the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; or (bb) where such expansion occurs within an urban area.	Expansion of jetty (quay) by a counterfort wall and deck on pile hybrid will occur in the sea and within the littoral active zone of the sea. The structures will be located within a distance of 100 metres inland of the highwater mark of the sea. The construction of stabilizing walls is applicable as construction process consists of placing the precast counterfort units of embankments, rock fill and stone bed along the vertical extents of the existing sheet pile wall. Both structures extend into the seawaters by 6 m each, total extension of 12 m from the existing structures, hence, the development footprint of the port or harbour will be increased or expanded by 2500 square metres which is more than 50 square metres. The exclusions do not apply to this project.
GNR 327 Activity 55 (i)(iii)(v)(a)(d)(e)(f)	Expansion— (i) in the sea; (iii) within the littoral active zone; (v) if no development setback exists, within a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever is the greater; in respect of —	Expansion of jetty (quay) by a counterfort wall and deck on pile hybrid will occur in the sea and within the littoral active zone of the sea. The structures will be located within a distance of 100 metres inland of the highwater mark. The infrastructure shall serve as breakwater structures to protect against tides, currents, waves, and storm surges.

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended.	Describe the portion of the proposed project to which the applicable listed activity relates.
	(a) facilities associated with the arrival and departure of vessels and the handling of cargo; (d) breakwater structures; (e) coastal marinas; (f) coastal harbours or ports; but excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.	The quay wall is currently being used for the berthing of fishing vessels and trawlers. Both structures extend into the seawaters by 6 m each, total extension of 12 m from the existing structures, hence, the development footprint of the port of Port Elizabeth will be increased or expanded.
GNR 327 Activity 65 (i) (ii)	The expansion and related operation of — (i) an anchored platform; or (ii) any other structure; on or along the sea bed, where the expansion will constitute an increased development footprint, excluding expansion of facilities, infrastructure or structures for aquaculture purposes	The proposed expansion of jetty (quay) by construction of a counterfort wall and deck on pile hybrid will occur on or along the sea bed. Both structures extend into the seawaters by 6 m each, total extension of 12 m from the existing structures, hence, the development footprint of the port or harbour will be increased or expanded by more than 50 square metres. The proposed rehabilitation is not for aquaculture purposes
Activity No(s):	Provide the relevant **Basic Assessment Activity(ies)** as set out in **Listing Notice 3** of the EIA Regulations, 2014 as amended.	Describe the portion of the proposed project to which the applicable listed activity relates.
GN.R R324 Activity 14 (ii) (a)(c) a.i.(bb)(ff)(hh)(ii) ii. (cc)	The development of— (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development ,occurs- (a) within a watercourse; (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or	The rehabilitation of the Old Tug Jetty will take place in the Port of Port Elizabeth, which is in the Eastern Cape. The water surface area of the proposed counterfort wall and deck on pile hybrid exceeds 10m². The physical footprint of the structure is greater than 10 square metres and also located within 5km of the Cape Recife Nature Reserve and the Nelson Mandela University Private Nature Reserve. The project falls within a

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended.	Describe the portion of the proposed project to which the applicable listed activity relates.
	structures within existing ports or harbours that will not increase the development footprint of the port or harbour. a. Eastern Cape i. Outside urban areas: (bb) National Protected Area Expansion Strategy Focus areas; (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; (ii) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; or ii. Inside urban areas: (cc) Areas seawards of the development setback line.	Critical Biodiversity Area (CBA2) The proposed project will occur within a watercourse, and within 32 metres of a watercourse. Both structures extend into the seawaters by 6 m each, total extension of 12 m from the existing structures, hence, the development footprint of the port or harbour will be increased. The project infrastructure is located within 1 kilometre from the high-water mark of the sea.
GNR 324 Activity 23 (ii) (a)(c) a.i.(bb)(ee)(gg)(hh)	The expansion of— (ii) infrastructure or structures where the Physical footprint is expanded by 10 square metres or more; where such expansion occurs—where such expansion occurs— (a) within a watercourse; (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. a. Eastern Cape i. Outside urban areas:	The rehabilitation of the Old Tug Jetty will take place in the Port of Port Elizabeth, which is in the Eastern Cape. The physical footprint of the structure will be expanded by more than 10 square metres and is also located within 5km of the Cape Recife Nature Reserve and the Nelson Mandela University Private Nature Reserve. The project falls within a Critical Biodiversity Area (CBA2) The proposed project will occur within a watercourse and within 32 metres of a watercourse. Both structures extend into the seawaters by 6 m each, total extension of 12 m from the existing structures,

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended.	Describe the portion of the proposed project to which the applicable listed activity relates.
	(bb) National Protected Area Expansion Strategy Focus areas; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; (hh) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; .	hence, the development footprint of the port or harbour will be increased. The project infrastructure is located within 1 kilometre from the high-water mark of the sea. .
GNR 324 Activity 26 i	Phased activities for all activities— i. listed in this Notice and as it applies to a specific geographical area, which commenced on or after the effective date of this Notice; —excluding the following activities listed in this Notice— 7; 8; 11; 13; 20; 21; and 24.	The proposed rehabilitation of the Old Tug Jetty: • Inherently occurs in the sea • Entails construction of a stabilising walls on the existing structure • Structures footprint is more than 50m² The Old Tug Jetty sheet pile wall rehabilitation project is divided into two phases. Phase 1 entails the construction of a counterfort wall with a berth depth of -5.2 m CD. Phase 2 will be implemented when there is sufficient demand for a deeper berth.. Phase 2 expansion entails the construction of an adjoining deck on pile structure partially supported by the counterfort wall with a design berth depth of -6.5 m CD. Thus, this activity is triggered because phase 2 will commence after construction of phase 1. Both structures extend into the existing seawaters by 6 m each resulting in a total extension

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended.	Describe the portion of the proposed project to which the applicable listed activity relates.
		of 12 m from the existing structures, hence the development footprint of the port will increase. The exclusion does not apply because none of the excluded listed activities are applicable to the proposed project.
Activity No(s):	Provide the relevant **Scoping and EIR Activity(ies)** as set out in **Listing Notice 2** of the EIA Regulations, 2014 as amended.	Describe the portion of the proposed project to which the applicable listed activity relates.
GNR 325 Activity 14(ii) (iii)	The development and related operation of— (ii) an anchored platform; or (iii) any other structure or infrastructure — on, below or along the sea bed; excluding — (a) development of facilities, infrastructure or structures for aquaculture purposes; or (b) the development of temporary structures or infrastructure where such structures will be removed within 6 weeks of the commencement of development and where coral or indigenous vegetation will not be cleared.	The proposed rehabilitation of the Old Tug Jetty: • Inherently occurs in the sea • Entails construction of a stabilising walls on the existing structure • Structures footprint is more than 50m² Phase 1 entails the construction of a counterfort wall with a berth and Phase 2 expansion entails construction of an adjoining deck on pile structure partially supported by the counterfort wall with a design. The proposed project involves construction of a counterfort wall and deck on pile hybrid will occur on or along the seabed. Both structures extend into the seawaters by 6 m each, total extension of 12 m from the existing structures, hence, the development footprint of the port or harbour will be increased or expanded by more than 50 square metres
GN.R 325 Activity 26 (i)(iii)(v) a)(d)(e)(f)	Development— (i) in the sea; (iii)within the littoral active zone;	The proposed rehabilitation of the Old Tug Jetty: • Inherently occurs in the sea • Entails construction of a stabilising walls on the existing structure

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended.	Describe the portion of the proposed project to which the applicable listed activity relates.
	(v)if no development setback exists, within a distance of 100 metres inland of the highwater mark of the sea or an estuary, whichever is the greater; in respect of — (a) facilities associated with the arrival and departure of vessels and the handling of cargo; (d)breakwater structures; (e)coastal marinas; (f) coastal harbours or ports; but excluding the development of structures within existing ports or harbours that will not increase the development footprint of the port or harbour.	Phase 1 entails the construction of a counterfort wall with a berth and Phase 2 expansion entails construction of an adjoining deck on pile structure partially supported by the counterfort wall with a design. Expansion of jetty (quay) by a counterfort wall and deck on pile hybrid will occur in the sea and within the littoral active zone of the sea. The structures will be located within a distance of 100 metres inland of the highwater mark. The infrastructure shall serve as breakwater structures to protect against tides, currents, waves, and storm surges. Both structures extend into the seawaters by 6 m each, total extension of 12 m from the existing structures, hence, the development footprint of the port or harbour will be increased or expanded by more than 50 square metres. The quay wall is currently being used for the berthing of fishing vessels and trawlers. The northern extent of the back of quay area is used for the transhipment of cargo and supplies, while the southern extent is used for boat maintenance.

The Department of Forestry, Fisheries and Environment has been identified as the Competent Authority responsible for consideration of all information provided as part of the Environmental Authorisation application submitted and decide whether to grant the applicant permission to commence with the listed activities referred to in **Table *4*** above.

2. DETAILS OF THE EAP

In terms of Regulation 13 of the EIA Regulations (GN R. 982) as amended, an independent EAP, must be appointed by the applicant to manage the application. Abantu Environmental Consultants (AEC) has been appointed by the Applicant as the EAP to assist with compiling the necessary reports and undertaking the public consultation processes, in support of the proposed Old Tug Jetty sheet pile wall rehabilitation project. AEC is compliant with the definition of an EAP as defined in Regulations 1 and 13 of the EIA Regulations, as well as Section 1 of the NEMA. This includes, the requirement that the EAP is:

- Objective and independent;
- Has expertise in conducting EIA's;
- Comply with the NEMA, the environmental regulations and all other applicable legislation;
- Considers all relevant factors relating to the application; and
- Provides full disclosure to the applicant and the relevant environmental authority.

The Curriculum Vitae (indicating the experience with environmental impact assessment and relevant application processes) of the consultants that is involved in the EIA process and the compilation of this EIA Report is presented in Appendix A.

2.1. EAP CONTACT DETAILS

As per the requirements of the NEMA Regulations, the details and expertise levels of the EAP who prepared the report are provided in **Table 5** below.

Table 5. Environmental Consultant details

Contact Details	
Consultant	Abantu Environmental Consultants (Pty) Ltd
EAP	Dr Patrick Sithole
Cell	078 207 8278
Postal Address	33 Prince Alfred North End Gqeberha 6001
Fax	086 685 9536
Email	Email: info@abantuenvironmental.co.za PE-EIA@abantuenvironmental.co.za
Website	Website: www.abantuenvironmental.co.za

2.2. EXPERTISE OF THE EAP

Dr Patrick Sithole is a registered natural scientific professional (SACNASP – Environmental and Chemical scientist), a registered Environmental Assessment Practitioner (EAPASA), social and sustainability expert with 23 years of experience. Patrick Sithole specializes in Strategic Environmental, Waste Planning, Social and Sustainable Development projects, Climate Change and Health, Environmental Management issues and Construction Supervision of all infrastructural projects. Dr Sithole is also involved in vegetation clearance and pest control projects along infrastructural projects e.g. roads, railway lines, power lines, golf courses and buildings like complexes, houses, malls, etc.

His key experience includes the following areas;

- Environmental (Natural Resource) Management
- Waste Planning
- Environmental Compliance
- Social Facilitation and Consultation
- Compensation of Land Claims
- Climate Change
- Climate (Change) and Human Health
- Air Quality Management
- Renewable Energy
- Waste Management
- Land Rehabilitation
- Water Quality/Demand Management
- Strategic Environmental Assessment
- Waste Water (sewer) Treatment
- Project Management
- ISO 9001 and ISO14001
- Vegetation Control Bush Clearance (Invasive plants)
- Teaching and mentoring

2.3. DETAILS OF INDEPENDENT SPECIALISTS

Details of the project team, including the appointed independent specialists are presented in **Table 6** below.

Table 6. Project team

Name and Surname	Role	Years of Experience	Qualifications	Professional registrations	Project Functions
Project Management					
Mr Sive Mlamla	Project Manager Registered Environmental Assessment Practitioner	8	MSc Geography	Pr.Sci.Nat Reg No. 118495 (SACNASP) Registered Environmental Assessment Practitioner (EAPASA) No. 2022/5204	• Overall project management • Site assessments • Management of specialists • Report writing
Technical staff					
Dr. Patrick Sithole	Registered Environmental Assessment Practitioner and Technical Reviewer	23	PhD Environmental Sciences	Registered Environmental Assessment Practitioner (EAPASA) No. 2016/27 Pr.Sci.Nat Reg No. 400264/07 (SACNASP)	• Environmental Impact Assessment • Site assessments • Public Participation • Technical report writing and reviews and approvals
Mrs Andisiwe Xuma	Senior Environmental Consultant	10	MSc Geography and Environmental Resources	Pr.Sci.Nat Reg No.114735 (SACNASP) Reg EAP (EAPASA) (Reg No. 2019/856)	• Site assessments, report writing and reviews
Ms Mongikazi Gxilishe	Junior Environmental Consultant	2	BSc Hons Environmental Geography	Cand.Sci.Nat Reg. No. 144438 (SACNASP)	• Site assessments, report writing and mapping
Specialists					
Dr Brent Newman	Marine Water and Sediment Quality Specialist	33	PhD Zoology (Marine)	Pr.Sci.Nat Reg No. 123899 (SACNASP)	• Marine water and sediment quality impact assessment Water sampling and analysis • Dredge permitting application
Ms Aadila Omarjee	Marine Ecological Specialist (Zoology)	14	MSc Marine Biology	Pr.Sci.Nat Reg No. 129167 (SACNASP)	• Marine faunal impact assessment • Site and desktop investigations
Dr Solomon Owolabi	Palaeontological Specialist	21	PhD Geology		• Palaeontological Impact assessment • Site and desktop investigation

Name and Surname	Role	Years of Experience	Qualifications	Professional registrations	Project Functions
Dr Anton De Wit	Social Impact Assessment	30	PhD Geography		• SIA

3. DESCRIPTION OF PROJECT

3.1. PROJECT OVERVIEW

Transnet is proposing the rehabilitation of the Old Tug Jetty Sheet Pile Wall which is located within the Port of Port Elizabeth and within Ward 5 of Nelson Mandela Bay Metropolitan Municipality in the Eastern Cape Province. The property that will be affected by the proposed activity is Erf Humewood 1051

The Jetty was constructed in the mid 1970's and comprises of steel interlocking 'U' steel sheet pile sections together with dead man anchors and a concrete capping beam. The extent of the site is 246 m with an advertised berth depth of -4 m CD (Chart Datum). As indicated in Figure 2 both new structures extend into the seawaters by 6 m each, total extension of 12 m (width) from the existing structures and the site extents are 246 m (length). Hence, the development footprint of the port or harbour will be increased or expanded by approximately 2500 square metres in total. The quay wall is currently being used for the berthing of fishing vessels and trawlers. The northern extent of the back of quay area is used for the transshipment of cargo and supplies, while the southern extent is used for boat maintenance.

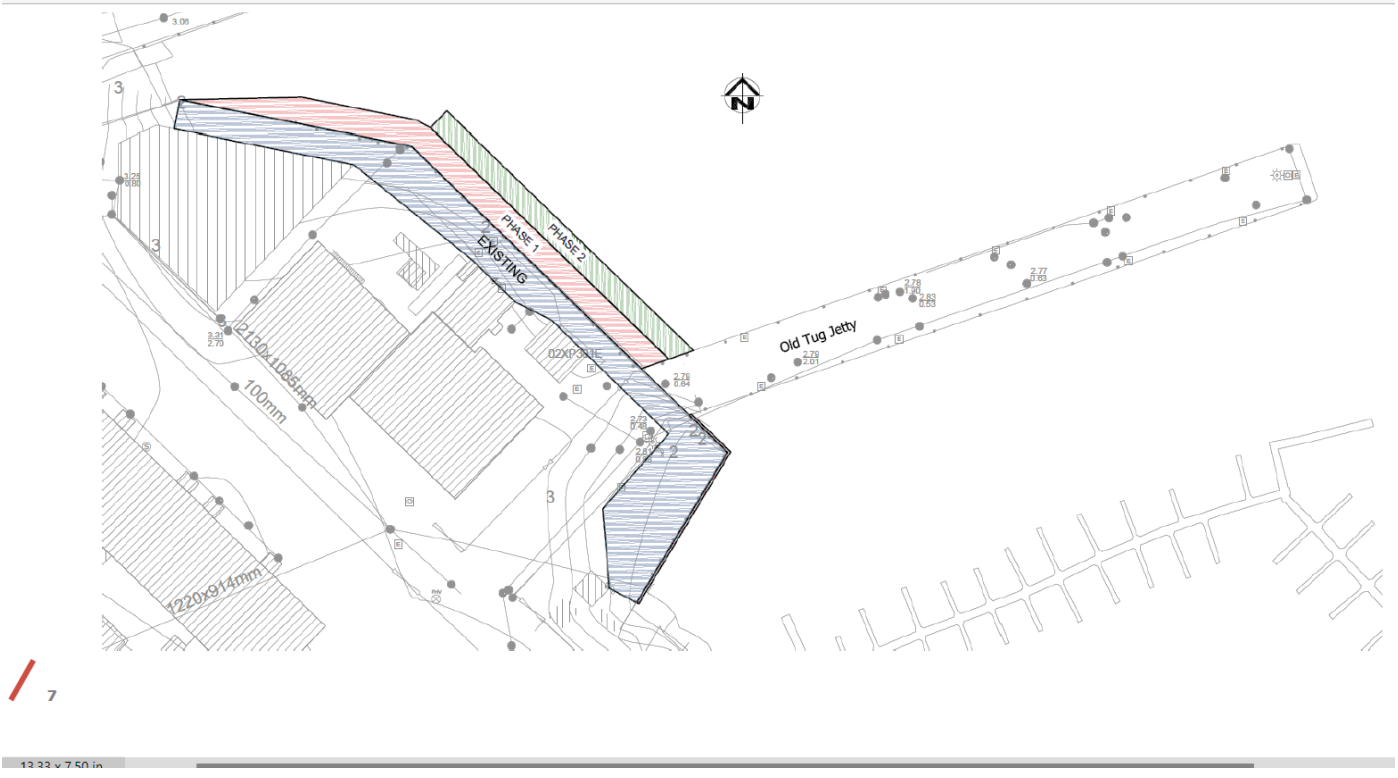


Figure 2: Overall layout of the project (Source: Transnet)

Motivation

As illustrated in ***Figure 3***, the sheet piles have corroded significantly with large holes visible in the tidal zone. These holes have caused leaching of backfill material resulting in the subsidence of the back of

quay area. Transnet National Port Authority (TNPA) has undertaken numerous repair campaigns involving filling holes with soilcrete. However, the continued deterioration of the sheet pile wall has resulted in an unsustainable maintenance regime. This led to the establishment of this project, which is to develop a long-term repair solution to make the quay safe to use and require minimum maintenance

Alternatives

PRDW were appointed by Transnet to conduct a pre-feasibility (FEL 2) study for the rehabilitation of the Old Tug Jetty sheet pile wall. A set of rehabilitation concepts for the Old Tug Jetty sheet pile wall were developed based on typical marine structure types, construction techniques, functional requirements, and existing site conditions. A prescreening assessment of the concepts was then undertaken using a high level, qualitative, multi-criteria analysis to eliminate options that were not considered viable, or which had fatal flaws. Thereafter, the remaining options were assessed in a multi-criteria analysis to determine the preferred solution. The full set of Old Tug Jetty sheet pile wall rehabilitation options that were considered for the pre-screening assessment are detailed in the EIA Report. All the rehabilitation options presented assume that the existing Old Tug Jetty sheet pile wall will be abandoned and buried and the back of quay area remediated. This means that the counterfort units will be placed proud of the existing sheet pile wall. There will be infilling of rock material between the old sheet pile wall and the new counterfort units with the construction of a new elevated cope, totally encasing the existing sheet pile wall, hence the term “buried and abandoned” (**Figure *5***). Although the old sheet pile wall will remain, it will no longer be in use and will be encased by the new structure, covered by the counterfort wall and will not be visible due to backfilling and concrete capping. Please refer to the full optioneering and multicriteria analysis report which has been attached as Appendix C.

Figure 3: Close-up image indicating the extent of the sheet pile corrosion

Preferred rehabilitation option (proposed upgrade)

Based on the outcomes of the optioneering and multi-criteria analysis, a counterfort wall and deck on pile hybrid structure was selected as the preferred rehabilitation option for the Old Tug Jetty sheet pile wall. This option comprises of 2 phases as illustrated in ***Figure 4***. Phase 1 entails the construction of a counterfort wall with a berth depth of - 5.2m CD. The Phase 2 expansion entails construction of an adjoining deck on pile structure partially supported by the counterfort wall with a design berth depth of -6.5m CD. Both structures extend into the existing seawaters by 6 m each resulting in a total extension of 12 m from the existing structures.

Figure 4: Phase construction of preferred solution

The phase 1 counterfort wall is 259.3 m long with a maximum cope line offset of 6 m from the existing, tapering as it approaches the boat ramps at each end. The cope level is at +4 m CD with the berth depth varying from -5.2 m CD along the north western face sloping up and tying into the extents of the boat ramps.

The existing sheet pile wall will be abandoned and buried and the back of quay area will be remediated. This means that the counterfort units will be placed proud of the existing sheet pile wall. There will be infilling of rock material between the old sheet pile wall and the new counterfort units with the construction of a new elevated cope, totally encasing the existing sheet pile wall, hence the term “buried and abandoned”. Although the old sheet pile wall will remain, it will no longer be in use and will be encased by the new structure, covered by the counterfort wall and will not be visible due to backfilling and concrete capping. The construction process consists of dredging marine sediment and the excavation of a thin layer of existing rock fill in front of the sheet pile wall. The risk of excavating in front of the existing sheet pile wall would need to be assessed as part of the next project phase. Thereafter, a filter fabric will be laid on top of the rock fill and along the vertical extents of the sheet pile wall. A stone bed is then placed on top of the filter fabric to create a level bed for the precast counterfort units. The counterfort wall is then seated on the stone bed and scour rock placed on top of its toe. Thereafter, the wall will be backfilled with quarry run and the concrete and civil work completed. Finally, the quay furniture will be installed. **Figure *5*** illustrates the typical cross section of the counterfort wall.

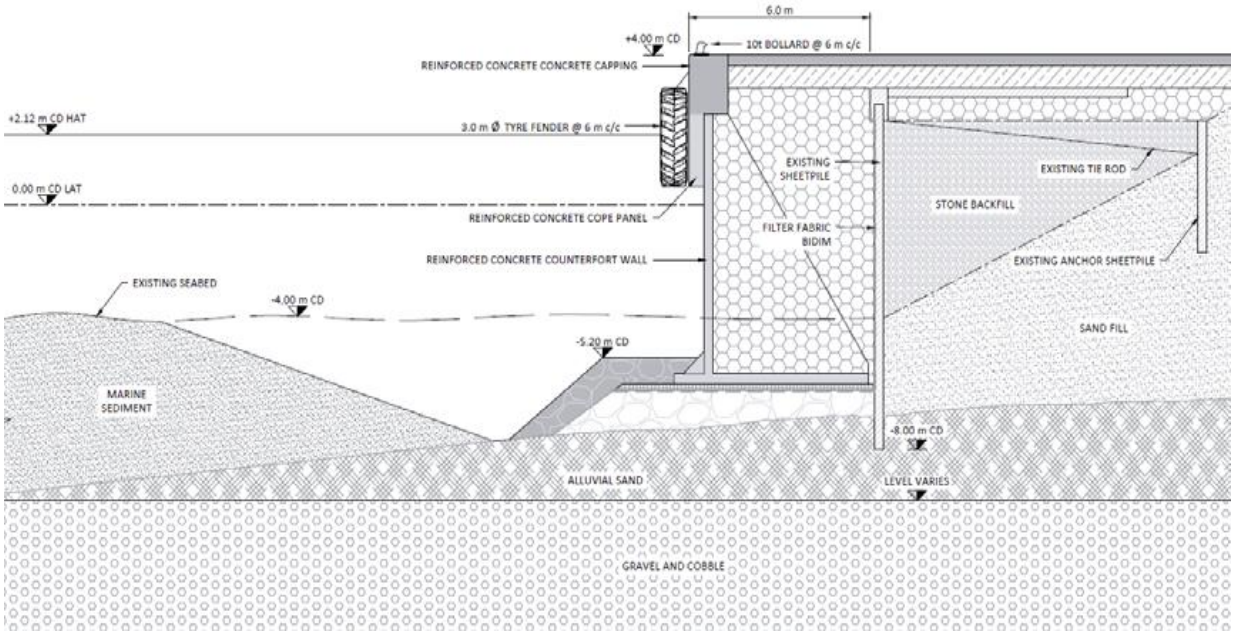


Figure 5: Phase 1 typical section

If there is sufficient demand for a deeper berth, the structure can be upgraded by implementing phase 2. Phase 2 of the project entails the construction of a deck on pile structure in front of the counterfort wall. The deck on pile jetty is 87.3 m long with further cope line offset of 5.8 m. The cope level is at +4 m CD with a berth depth of -6.5 m CD. The deck on pile length is limited to the extents illustrated in ***Figure 4*** because it is not possible to achieve the -6.5 m CD berth depth along the approaches to the slipways as the seabed needs to rise to suit the boat ramp geometry.

The construction process would commence with the dredging of marine sediment. Then the existing quay furniture on the counterfort wall affected by the deck on pile structure would be removed. Thereafter, steel tubular pile casings would be driven at the toe of the existing rock fill, excavated out to toe level and then the reinforced concrete pile cast inside. Precast pile caps would then be seated on top of the pile. Abutments will be constructed into the counterfort units which will house the precast beams and provide lateral support to the deck on pile structure. After placing precast beams, cope panels and planks the elements are stitched together with in-situ reinforced concrete. Finally, the quay furniture would be installed. **Figure *6*** illustrates the typical cross section of the counterfort wall and deck on pile structure.

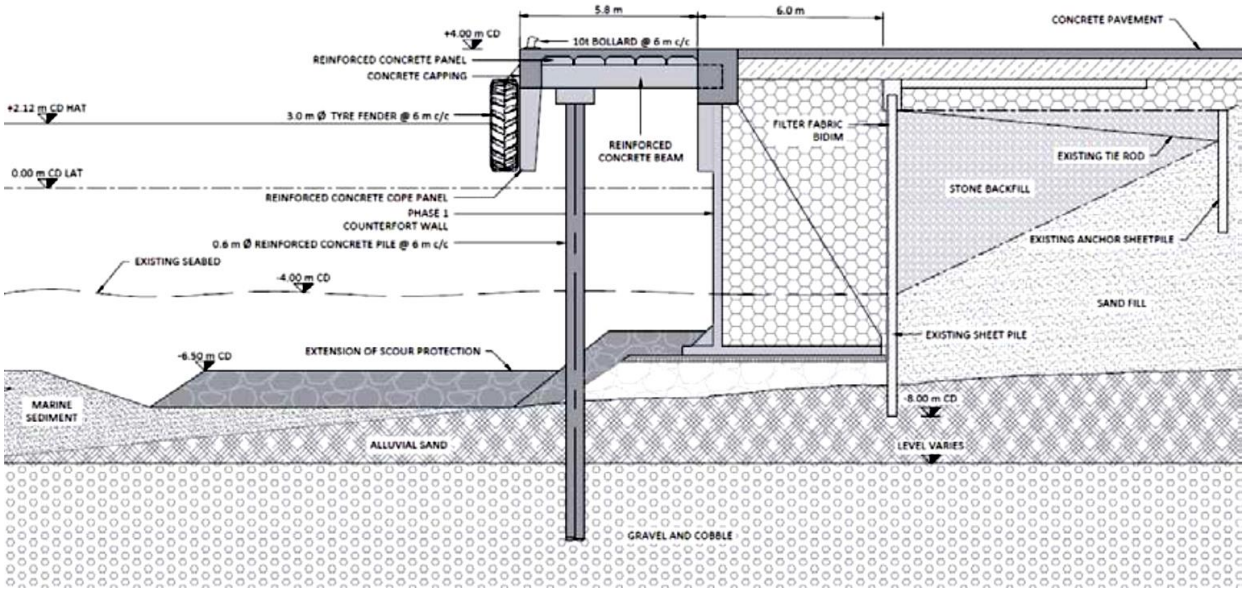


Figure 6: Phase 2 typical section

3.1.1. LOCATION OF THE PROJECT

Table provides a description of the property details and size of the proposed development footprints as well as the nearest towns. The location of the affected property and proximity to the nearest towns is provided in **Table 7**.

Table 7. Description of property

Province	Eastern Cape
District	Nelson Mandela Bay Metropolitan Municipality
Local Municipality	Nelson Mandela Bay Metropolitan Municipality
Ward number	Ward 5
Property	Erf Humewood 1051 Portion 0
21-digit Surveyor General Code	C05900140000105100000
Application Area (Ha)	11,7112
Magisterial District	PORT ELIZABETH RD
Distance and direction from nearest towns	The proposed Old Tug Jetty sheet pile wall rehabilitation is located within the Port of Port Elizabeth and within Ward 5 of Nelson Mandela Bay Metropolitan Municipality. The Erf is located in Humewood, which is 4km away from Gqeberha Central.

3.1.2. PROJECT INFRASTRUCTURE AND ASSOCIATED ACTIVITIES

Quay furniture that will be installed includes the following:

- Fenders
- Bollards

- Safety ladders
- Life-saving equipment
- Quayside service requirements

The following is a proposed sequence for the construction. Construction will be split into two phases as described below.

Phase 1 – Counterfort wall

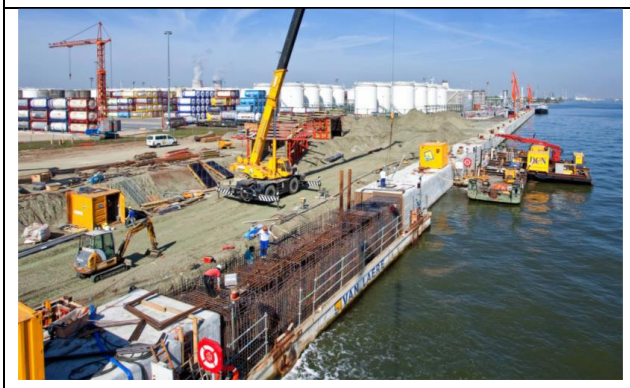
- Decommission of Old Tug Jetty sheet pile wall
- Site establishment
- Procurement of materials
- Dredge to appropriate level and remove top layer of rock fill
- Place filter fabric on top of rock fill and along vertical extents of the existing sheet pile wall
- Place stone bed layer
- Cast counterfort units in a casting yard
- Remove all the existing quay furniture and demolish existing structures that obstruct the new works
- Place counterfort units
- Install scour rock on top of counterfort toe
- Backfill counterfort with quarry run
- Place filter fabric on top of quarry run backfill
- Undertake pavement layer works
- Install civil services
- Cast concrete capping beam and cope panel
- Install quay furniture
- Paving to final levels and services fit out
- Commissioning

1. Dredge to required level


2. Place counterfort units & block work

3. Place scour rock

4. Backfill & install civil services



5. Cast capping beam & fender panel

6. Pave & install quay furniture

Phase 2 – Deck on pile structure

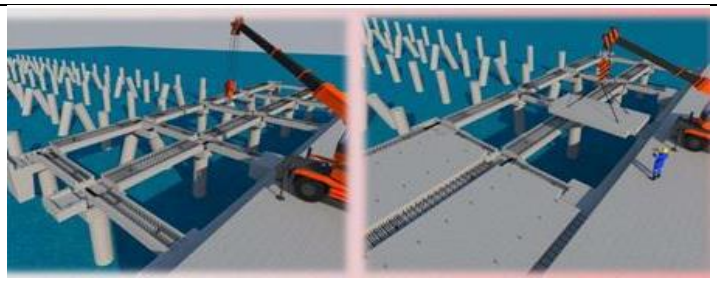
- Partial decommission of Old Tug Jetty counterfort wall
- Site establishment
- Procurement of materials – steel pile casing assumed to be imported
- Dredge to appropriate level
- Remove all the existing quay furniture – store for reuse on the new structure
- Pile installation
- Install guide frame with required temporary support
- Drive tubular pile casing to level
- Excavate out pile using auger, grab and airlift
- Insert reinforcing cage into pile
- Tremie concrete to fill pile
- Install scour protection
- Prepare counterfort capping beam to receive deck on pile primary beam
- Place and grout into position precast pile cap
- Deck installation
- Place precast primary beam seated on counterfort wall and pile cap

- Place precast slab planks between primary beams
- Hang and brace precast cope panel in position using a construction frame
- Pour in-situ concrete to stitch precast elements together and form capping beam and deck slab
- Install quay furniture
- Commissioning

1. Dredge to required level

2. Install piles

3. Place scour rock



4. Place precast elements

5. Install civil services & place stitching concrete

6. Install quay furniture

An illustration of the precast counterfort wall unit is included in **Figure 7** below for reference.

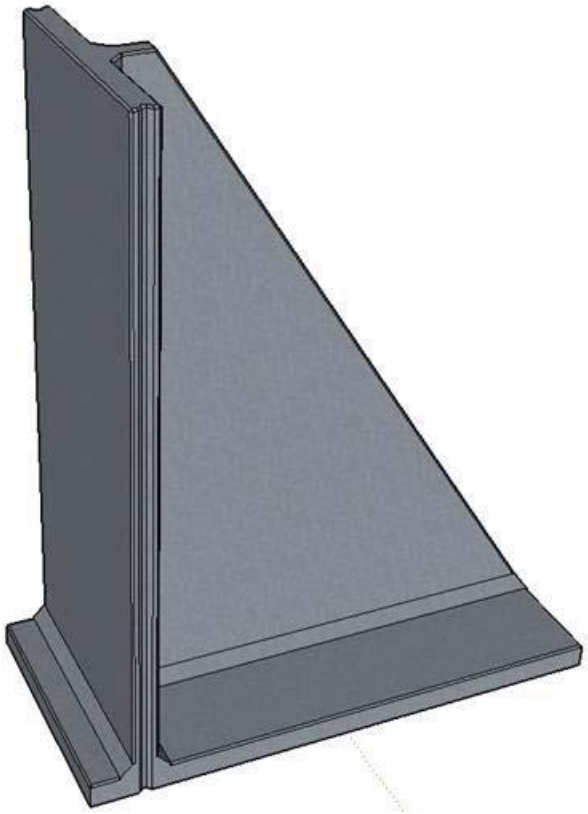


Figure 7: Precast counterfort wall unit

3.1.3. LAND OWNERS OF THE AFFECTED PROPERTIES

The proposed Old Tug Jetty is located on Erf Humewood 1051 which is owned by Transnet SOC Ltd. According to Lexis Windeed, Transnet is the sole owner of this property, and the ownership was registered in May 1993.

3.1.4. 21 DIGIT SURVEYOR GENERAL CODES

The 21 Digit Surveyor General code of the affected property is detailed below:

C	0	5	9	0	0	1	4	0	0	0	0	1	0	5	1	0	0	0	0	0
1	**2**			**3**				**4**								**5**				

3.2. SITE ACCESS

The project site is located within the Port of Port Elizabeth boundary. Access to the site will need to be through the Baakens River entrance on Lower Valley Road. There is limited backup area and open space for contractor laydown areas and stockyards. However, there is the potential to utilise the open field close to the site.

3.3. PROJECT PHASES

3.3.1. Pre- Construction (Planning) Phase

The planning phase of the project involves undertaking studies and submission of various applications that are required in order for the project to proceed. The proponent also undertakes feasibility studies and detailed designs to allow for seamless execution once all authorizations are obtained. There are minimal environmental impacts anticipated during the pre-construction phase however, this phase is important to ensure that the project complies with the legislative and policy framework. Some economic benefit can be derived from appointment of environmental professionals, engineers and other skilled personnel required during this phase.

3.3.2. Construction Phase

Once the Environmental Authorization and any other required permits are obtained, the construction phase can commence. The Rehabilitation of the Old Tug Jetty Sheet Pile wall is expected to extend over a period of between 12 and 25 months where Phase 1 would take approximately 12-15 months and Phase 2 can be 9-10 months.

The construction phase will involve the transportation of personnel, construction material and equipment to the site, and personnel away from the site. In terms of site establishment, laydown areas will be required at the outset of the construction phase, as well as dedicated access routes from the laydown areas to the working areas.

The laydown area will either be located adjacent to or at the project site. It is expected that the laydown area will be temporary in nature (for the duration of the construction phase) and will include the establishment of the construction site camp (including site offices and other temporary facilities for the appointed Contractors).

All efforts will be made to ensure that all construction work will be undertaken in compliance with local, provincial and national legislation, local and international best practice, as well as the Environmental Management Programme (EMPr), which will be compiled during the EIA Phase and included in the EIA Report. During the construction phase, both skilled and unskilled temporary employment opportunities will be created. It is also anticipated that the normal activities at the Old Tug Jetty may be interrupted during construction especially the vessels and surrounding businesses, however the scheduled will be communicated and all interested and affected parties will be notified of the project as it progresses.

The current occupants of the site have been informed about the development and processes are already underway to move them to the nearby building for the duration of the construction period.

3.3.3. Rehabilitation Phase

The Rehabilitation Phase will involve removal of all temporary structures from the site, disposal of waste and cleanup of all spills and excess materials. All effort will be made to return the site as close to its state prior to construction as possible. No revegetation is envisaged since there is currently no vegetation on the site.

3.3.4. Operation Phase

It is anticipated that once all construction and rehabilitation activities are completed, the Old Tug Jetty will return to its normal and optimal operations which include berthing of fishing vessels and trawlers, transshipment of cargo and supplies and boat maintenance. The new structures will allow these activities to take place in a safe manner. No substantial changes to the use of the area are anticipated following rehabilitation. The only impacts associated with the operational phase of the proposed project that were assessed are thus those associated with an altered geometry of the sheet pile wall on hydrodynamic conditions, ecological and hydrodynamic impacts posed by the deck-on-pile structure, and the permanent loss of open water and sediment habitat.

4. SCOPE OF THE EMPR

Transnet recognises environmental management as a key component of infrastructure development and as part of its environmental policy has developed this Environmental Management Programme (EMPr) as a tool for continual improvement in environmental performance. This EMPr has been integrated with Transnet's Standard Environmental Management Plan.

This EMPr prescribes the methods by which proper environmental controls are to be implemented by the Contractor. The duration over which the Contractor's controls shall be in place cover the construction period of the project as well as the limited time after contract completion.

The provisions of this EMPr are binding on the Contractor during the life of the contract. They are to be read in conjunction with all the documents that comprise the suite of documents for this contract, particularly the conditions of any environmental authorisation and associated Environmental Management Programme (EMPr). In the event that any conflict occurs between the terms of the EMPr and the project specifications or environmental authorisation, the terms herein shall be subordinate.

The EMPr is a dynamic document subject to similar influences and changes as are brought by variations to the provisions of the project specification. Any changes to the EMPr and/or environmental authorisation cannot occur without being submitted to Transnet who will manage the process of amending the EMPr.

The EMPr identifies the following:

- Relevant parties and their responsibilities;
- Construction activities that will impact on the environment;
- Specifications with which the Contractor shall comply to protect the environment from the identified impacts; and
- Actions that shall be taken in the event of non-compliance.

5. DEFINITIONS

Table 8: List of Terminology and Definitions

Terminology	Explanation
Activity	Any action needed for the design, construction, maintenance and completion of a project.
Alien species	A species occurring in an area outside of its historically known natural range as a result of intentional or accidental dispersal by human activities.
Environmental aspect	An element of an organization's activities or products or services that can interact with the environment.
Communication register	A register aimed at tracking all communication activities within the project.
Contaminated water	Water that contains pollutants from on or off-site activities rendering it unfit for release into the natural receiving environment. Contaminated water must be treated to ensure that water released into the receiving environment meets the minimum standards and guidelines. Treated water should be recycled where possible (e.g. used for dust suppression).
Department of Forestry, Fisheries and the Environment (DFFE)	The competent authority responsible for the review and /or approval of an Environmental Management Plan.
Department of Mineral Resources (DMR)	The competent authority responsible for mineral and petroleum resources management.
Department of Water and Sanitation (DWS)	The competent authority responsible for water management.
Development	Means the building, erection, construction or establishment of a facility, structure or infrastructure, including associated earthworks or borrow pits, that is necessary for the undertaking of a listed or specified activity, including any associated post development monitoring, but excludes any modification, alteration or expansion of such a facility, structure or infrastructure, including associated earthworks or borrow pits, and excluding the redevelopment of the same facility in the same location, with the same capacity and footprint.
Employer	Transnet SOC (LTD) Registration number 1990/000900/30
Environment	The surroundings in which humans exist and an organization operates and includes the land, water, atmosphere; natural resources, micro-organisms, plant and animal life, any part or combination and interrelationships; and the physical, chemical, aesthetic, historical, cultural and economic properties and conditions of the foregoing that can influence human health and wellbeing.
Environmental Audit	Systematic, documented, regular and objective evaluation to see how well an organisation or facility is operating in terms of the Environmental Management

Terminology	Explanation
	Plan and is complying with statutory requirements and the organisation's Environmental Policy.
Environmental Authorisation	The authorisation issued by a competent environmental authority for commencement of listed activities in terms of the National Environmental Management Act (Act 107 of 1998).
Environmental impact	Any change to the environment, whether adverse or beneficial, wholly or partially that results from an organisation's environmental aspects.
Environmental Impact Assessment	The process of collecting, organising, analysing, interpreting and communicating information in accordance with the environmental legal requirements set out in GNR. No 982, GNR. 983, GNR. 984 and GNR 985 as published in Government Gazette No. 38282 of 4 December 2014 (as amended), promulgated in terms of Chapter 5 of the National Environmental Management Act (Act 107 of 1998), for the purposes of obtaining an Environmental Authorisation in accordance with Chapter 5 of the National Environmental Management Act.
Environmental Management Inspector	A person designated as an Environmental Management Inspector in terms of Section 31B or 31C of the National Environmental Management Act (Act 107 of 1998).
Environmental Management Plan	A tool used to prescribe management mechanisms or methods for the prevention of undue or reasonably avoidable adverse environmental impacts and for the enhancement of the positive environmental benefits of a development.
Environmental objectives	The overall environmental goal arising from the Environmental Policy that an organisation sets itself to achieve, and is quantified where practicable.
Ergonomic	Defined as the design; making usable, user-friendly; or comfortable and safe to minimize physical effort and discomfort, thereby maximizing efficiency
Fauna	All animals, living biological creatures, usually capable of motion, including insects and predominantly of protein-based consistency.
Fire danger index	A relative number denoting an evaluation of rate of spread or suppression difficulty for specific combinations of fuel, fuel moisture and wind speed.
Fire hazard	The relative combination of fuel, oxygen and heat that will lead to the start and spread of a potential fire.
Flood line	The line or mark to which a flood could rise every 50 (1:50 year flood line) or 100 (1:100 year flood line) years.

Terminology	Explanation
Flora	All living plants, grasses, shrubs, trees, etc. that are typically incapable of easy natural motion and capable of photosynthesis.
Groundwater	Water that is found beneath the earth's surface and fills the natural openings in below-surface rock or unconsolidated sands.
Hazardous waste	Waste that, because of its chemical reactivity, toxic, explosive, corrosive, radioactive or other characteristics, causes danger or is likely to cause danger to health or the environment.
Heritage resources	Any place or object of cultural, archaeological or paleontological significance in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999).
Induction training	The training provided to new / existing employees to (re)acquaint them with the company structure, their specific job requirements, practical or organisational issues and occupational health, safety and environmental considerations required on the project.
Integrated Environmental Management	the promotion of the integration of the principles of environmental management as set out in Section 2 of the National Environmental Management Act (Act 107 of 1998) in making decisions that may have a significant effect on the environment; the identification, prediction and evaluation of the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts and maximising benefits; ensuring that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them; ensuring an adequate and appropriate opportunity for public participation in decisions that may affect the environment;
Environmental Management Inspector	A person designated as an Environmental Management Inspector in terms of Section 31B or 31C of the National Environmental Management Act (Act 107 of 1998).
Environmental Management Plan	A tool used to prescribe management mechanisms or methods for the prevention of undue or reasonably avoidable adverse environmental impacts and for the enhancement of the positive environmental benefits of a development.

Terminology	Explanation
Environmental objectives	The overall environmental goal arising from the Environmental Policy that an organisation sets itself to achieve, and is quantified where practicable.
Ergonomic	Defined as the design; making usable, user-friendly; or comfortable and safe to minimize physical effort and discomfort, thereby maximizing efficiency
Fauna	All animals, living biological creatures, usually capable of motion, including insects and predominantly of protein-based consistency.
Fire danger index	A relative number denoting an evaluation of rate of spread or suppression difficulty for specific combinations of fuel, fuel moisture and wind speed.
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Hazardous waste	Waste that, because of its chemical reactivity, toxic, explosive, corrosive, radioactive or other characteristics, causes danger or is likely to cause danger to health or the environment.
Heritage resources	Any place or object of cultural, archaeological or paleontological significance in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999).
Induction training	The training provided to new / existing employees to (re)acquaint them with the company structure, their specific job requirements, practical or organisational issues and occupational health, safety and environmental considerations required on the project.
Integrated Environmental Management	the promotion of the integration of the principles of environmental management as set out in Section 2 of the National Environmental Management Act (Act 107 of 1998) in making decisions that may have a significant effect on the environment; the identification, prediction and evaluation of the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts and maximising benefits;

Terminology	Explanation
	ensuring that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them; ensuring an adequate and appropriate opportunity for public participation in decisions that may affect the environment; ensuring the consideration of environmental attributes in management and decision making, which may have a significant effect on the environment; and identifying and employing the modes of environmental management best suited to ensure that a particular activity is pursued in accordance with the principles of environmental management as set out in Section 2 of the National Environmental Management Act (Act 107 of 1998).
Interested and Affected Parties (I&AP)	Any person or group of people concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, customers and consumers, environmental interest groups, and the general public (after the Environmental Impact Assessment Regulations of September 1997 and Guideline Document: Environmental Impact Assessment Regulations of April 1998).
Land Use	The arrangements, activities and inputs people undertake in a certain land cover type to produce, change or maintain it. This definition establishes a direct link between the land cover and the actions of people in their environment.
Maintenance	Actions performed to keep a structure or system functioning or in service on the same location, capacity and footprint. It does not include an increase in the footprint or throughput capacity. It includes reconstruction, if on the same location, capacity and footprint.
Materials	All kinds of items (other than Plant) intended to form or forming part of the Permanent Works, including the supply-only materials (if any) to be supplied by the Contractor under the Contract.
Mitigate	The implementation of practical measures to reduce any adverse impacts or to enhance the beneficial impacts of an action
No-go area	An area where construction and maintenance activities are prohibited.
Non-compliance	Failure to comply with the requirements of the EMP.
Non-conformance report	A report outlining a deviation from process, procedure or compliance specifications.

Terminology	Explanation
Plant	The apparatus, machinery and vehicles used during Permanent Works.
Pollution	Any change in the environment caused by substances or noise, malodours, dust or heat emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, where that change has an adverse effect on human health or wellbeing or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future
Potentially hazardous substance	A substance that can have a deleterious effect on the environment. Hazardous chemical substances are defined in the Regulations for Hazardous Chemical Substances, published in terms of the Occupational Health and Safety Act, 1993 (Act 85 of 1993).
Precautionary principle	The basic principle that, when in doubt or when there is insufficient or unreliable information, actions must be undertaken that have minimum risk.
Quality management system	A set of interrelated or interacting elements that organisations use to direct and control how quality policies are implemented and quality objectives are achieved.
Rehabilitation	Re-establishment or restoration to a healthy sustainable capacity or state.
Resource recovery	Recycling of waste or the recovery of energy.
Sensitive receptors	Locations or areas that are likely to experience an impact more than other locations or areas; for example, schools and residential areas.
Solid waste	All solid waste, including construction / maintenance debris, chemical waste, excess cement / concrete, wrapping materials, timber, steel, drums, wire, nails, food and domestic waste (e.g. plastic bags and wrappers).
Target	The detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.
Waste minimisation	The reduction of the volume of waste during maintenance by means of different processes or clean technology.
Waste prevention	The prevention and avoidance of the production of a waste.
Wastewater	Water containing cement washings, oil, fuel or other contaminants.
Water resource	Includes the sea, a watercourse, surface water, estuary, or aquifer.

Terminology	Explanation
Works	Means the Permanent Works and the Temporary Works, or either of them as appropriate.

Table 9: List of Abbreviations

Explanation	
DFFE	Department of Forestry, Fisheries and Environment
DWS	Department of Water and Sanitation
EMP	Environmental Management Plan
EO	Environmental Officer
FDI	Fire Danger Index
I&AP(s)	Interested and Affected Party(ies)
NEMA	National Environmental Management Act (Act 107 of 1998)
NEM:ICMA	National Environmental Management: Integrated Coastal Management Act (Act 24 of 2008)
NHRA	National Heritage Resources Act, 1999 (Act 25 of 1999)
NID	Notice of Intent to Develop
NWA	National Water Act, 1998 (Act 36 of 1998)
PCO	Pest Control Officer
PEM	Project Environmental Manager
PPE	Personal Protective Equipment
SAHRA	South African Heritage Resource Agency
SANS	South African National Standard
CEMP	Construction Environmental Management Plan
SES	Standard Environmental Specification
PES	Project Environmental Specification

6. ADMINISTRATION OF ENVIRONMENTAL OBLIGATIONS

6.1. INSTITUTIONAL AND FUNCTIONAL ARRANGEMENTS

During construction works it is Transnet's responsibility to ensure that all parties involved in maintenance related activities receive a copy of the emp and ensure compliance with it. The emp is to be included as part of all contract documents. The appointed contractor will be required to comply with the management regulations set out in this emp. The contractor will be responsible for ensuring that all contracting staff adhere to the emp specifications. A copy of the emp will be kept on site at the contractor's site office and made available to all Contractor staff, regulatory authorities, port users and tenants upon request.

6.2. ENVIRONMENTAL MANAGEMENT: ROLES AND RESPONSIBILITIES

6.2.1. Transnet Project Environmental Manager (PEM)

The Transnet PEM will be responsible for ensuring that the EMP and associated specifications or requirements are complied with during construction. The Transnet PEM will report functionally to the Transnet National Environmental Manager and provide support to the Transnet Project Manager.

The specific tasks during the maintenance will include:

- Liaison with the authorities
- Preparation of the Project Environmental Specification (PES)
- Tender evaluation, development of environmental criteria and adjudication thereof
- Review all reports from the Environmental Specialist /Officer, including sign off on Method Statements
- Conduct any environmental incident enquiries
- Identify, with support from the Project Manager, the need for corrective or remedial measures with regard to proposed works
- Ensure induction material includes project appropriate environmental issues
- Approve training programmes and other awareness initiatives
- Coordinate or facilitate internal environmental audits
- Prepare environmental monitoring protocols (if monitoring to be done by Environmental Specialist and not an outside consultant)
- The Transnet PEM may delegate part or all of these responsibilities to the Transnet Project Environmental Officer (EO), based on the merits of the particular project at hand.

6.2.2. Transnet Project Manager (TPM)

The Transnet Project Manager has overall responsibility for environmental management on site to ensure all project activities comply with environmental legislation and this includes as a minimum the implementation of the EMP, permit and license conditions. The Transnet Project Manager is supported by the Transnet PEM.

The specific environmental tasks during the construction phase will include:

- Reviewing the reports compiled by the Transnet Project Environmental Officer
- Communicating directly with the Contractors
- Issuing non-conformance notification to Contractors that do not comply with the requirements of the EMP and associated requirements or documents, including EA, EMP, permits and licenses
- The Transnet Project Manager may delegate some responsibilities to the Transnet Construction Manager

6.2.3. Transnet Environmental Specialist (TES)

The role of the Transnet Environmental Specialist is essentially the same as that of an Environmental Control Officer (ECO) but with some additional responsibilities. In instances where the EA requires an

independent ECO, an outside consultant will be contracted to undertake the environmental audits of the project. The Transnet Environmental Specialist functionally reports to the Transnet National Environmental Manager, and provides mainly quality assurance with respect to the implementation of the overall environmental governance framework during construction. The Transnet Environmental Specialist will conduct audits on projects periodically. The scope of these audits will include both conformances to the Transnet Environmental Governance Framework, as well as legal compliance.

6.2.4. Transnet Project Environmental Officer

The Transnet Project Environmental Officer (EO) reports functionally to the Transnet Project Manager and Transnet PEM and is responsible for conducting the tasks required to ensure that the EMP, including permits and licenses are implemented on the construction site.

The Transnet Project Environmental Officer will conduct the following tasks:

- Ensure that environmental issues receive adequate attention in the Transnet SHE induction training
- Request awareness training (e.g. tool box talks, signage) from the contractor through the SHE File approval process
- Monitor the Contractor's compliance with the EA, EMP and any permits and licences on site
- Conduct monthly observations and environmental audits of all Contractor's and work areas
- Ensure that all environmental monitoring programmes (sampling, measuring, recording, etc. when specified) are carried out according to protocols and schedules
- Measurement of completed work (e.g. areas top-soiled, re-vegetated, stabilised, etc.)
- Maintain site documentation related to environmental management (permits, CEMP, method statements, EA, reports, audits, monitoring results, receipts for waste removal etc.). Documentation to be maintained on the relevant site Document Control System
- Inspect and report on environmental incidents and check corrective action
- Keep a regular photographic record of environmental incidents
- Management of complaints & incident registers
- Review and Sign off Method Statements prepared by Contractors
- Audit compliance to Environmental Method Statements
- The key deliverables will include the compilation of:
- Monthly inspection/environmental audit report
- Monitoring results
- Site close-out reports
- Incident reports
- Environmental Incident Register
- Environmental Non-Conformance Register
- Complaints Register
- Site Close Out Inspection

6.2.5. Contractor's Environmental Officer

The Contractor will appoint an Environmental Officer whose role is to ensure implementation of the EMP, where applicable. The Contractor will submit the name and roles and responsibilities with their tender submission. This will be for Transnet's approval and no work can commence on site if this has not been done.

As a minimum the Contractor's EO shall have an accredited diploma qualification in environmental or natural sciences or equivalent and a minimum of 2 years' experience in a similar role in construction or other environmental regulatory field. In addition to the compliance duties relating to EMPr the DEO shall also provide full cooperation whenever the Contractor is subjected to regular environmental audits. He/she must be appropriately trained in environmental management and possess the skills necessary to impart environmental management skills to all personnel involved in the contract.

The Contractor's Environmental Plan will include, but not be limited to:

- Description of environmental management responsibilities of the Contractor's Project Manager, Contractor's Site Manager and the Contractor's Environmental Officer
- Organisational Environmental Policy
- Environmental Method Statements
- EMPr
- The Contractor's Environmental Officer will liaise with the Transnet Project Environmental Officer on site. It will be the responsibility of the Contractor's Environmental Officer to ensure that all work is conducted according to approved Environmental Method Statements and that the roles and responsibilities as set out in this document are fulfilled. The Contractor's Environmental Officer tasks will include:
- Daily, weekly and monthly inspections of the work area(s) as per schedule or authorised through written instruction by Transnet PEM or Environmental Officer. The Contractor is referred to Section for an example of the items that will need to be inspected and which items will be audited by the Transnet Environmental Officer
- Prepare activity/aspect based Environmental Method Statements
- Identify local, provincial and national environmental legislation that applies to the Contractor's activities
- Monitor compliance with the EMP, Environmental Method Statements and environmental legal instruments (permits, licenses, etc) applicable to the project
- Ongoing Environmental Awareness Training of the Contractor's site personnel
- Reporting, investigating and recording of any environmental complaints, non-conformances, incidents caused by the Contractor or due to the Contractor's activities, including their sub-contractors
- Ensure close out of project specific environmental incidents, complaints and non-conformances
- Maintenance of Environmental Incident Register, Environmental Non-Conformance Register and Complaints Register
- Attendance at all SHE meetings and induction programmes, and toolbox talks where possible
- Waste Management
- Project Start Up Checklist

- Method Statements Register
- Hazardous Substances Register
- Ensure that environmental signage and barriers are correctly placed
- Taking required corrective action within specified time frame

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

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

6.2.6. Organisational structure

The organisational structure identifies and defines the responsibilities and authority of the various entities involved in the project. All instructions and official communications regarding environmental matters will follow the organisational structure shown in Figure 2.

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

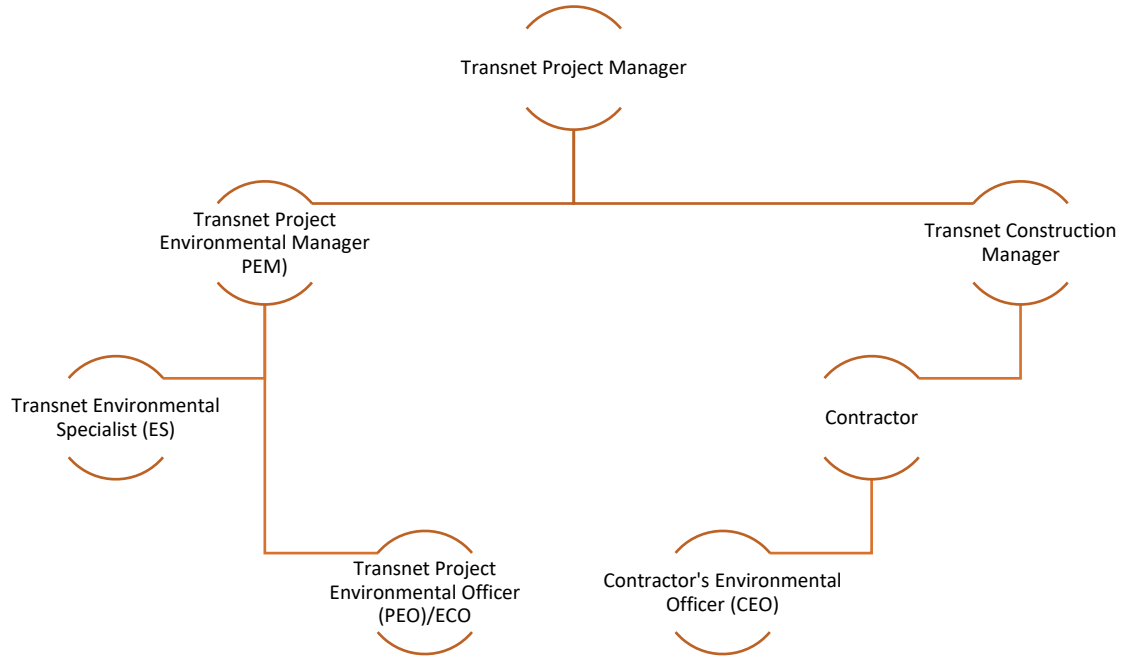

Figure 8: Environmental Management Organogram

6.2.7. The Contractor

The Contractor will comply with the requirements of the EMPr and abide by the Transnet Construction Manager's instructions regarding the implementation of the EMPr.

The contractor must prior commencement of construction provide a well-documented EMP based on Transnet Environmental Specification. The Contractor EMPr will be reviewed and approved by Transnet Project Environmental Officer.

7. IMPACT MANAGEMENT

7.1. IMPACT MANAGEMENT OBJECTIVES

Aspect /Method Statement	Objective	Target	Criteria
Access	To institute adequate access agreements and measures to ensure the safety of landowners and integrity of the gates/fences.	No damage to existing gates and fences. All gates equipped with locks to prevent unauthorised access. No complaints about open gates. Compliance with regulatory requirements.	Access agreements between Contractor and landowner/occupant. Implementation of suitable access and fencing requirements.
Aesthetics	Reduce construction impacts upon the aesthetics of the surrounding environment.	No complaints from I&APs.	Implementation of measures to reduce impacts upon the aesthetics of the surrounding landscape.
Bunding	To contain and manage all hazardous substance releases into the environment.	No environmental pollution occurring. Management according to agreed procedures.	Method of bunding and covering for static and mobile plant
Construction Site and Office / Yard Establishment	To ensure site infrastructure, plant, materials and equipment are contained within a suitably secure locality that is adequately zoned and authorised in terms of regulatory requirements.	No complaints from landowners No damage to private property Compliance to regulatory requirements. No unplanned disturbance to construction related activities.	Site office/yard layout and preparation Method of installing fences required for no-go areas, working areas and construction areas Preparation of the working area
Cement Mixing / Concrete Batching / Bentonite Mixing	Provide measures to contain cementitious products impacting upon the surrounding environment.	All cementitious mixing to occur within demarcated localities. No indiscriminate spoiling of cementitious products in non-designated areas. No impacts upon receiving water resources.	Location, layout and preparation of cement / concrete batching facilities, including the methods employed for mixing concrete and the management of run-off water from such areas.
Contaminated Water	Ensure no contamination or pollution of water impacted upon by construction related activities.	All waste and contaminated water must be monitored and comply with regulatory requirements.	Contaminated water management, including the containment of run-off and polluted water
Dust	Reduce construction related dust impacts on the surrounding environment. Prevent dust nuisance and health impacts on people and animals in the area.	No complaints from I&APs. Dust emissions must be monitored and comply with regulatory requirements.	Dust control and monitoring measures Develop and maintain a complaints and responses register
Environmental Monitoring	Implement a programme whereby impacts upon the surrounding can be monitored and implement measures to mitigate such impacts.	Compliance with regulatory requirements: Dust: NEM AQA Air Quality Regulations; Noise: NEM: AQA Air Quality Regulations; and	Monitoring construction-related impacts upon the surrounding environment is kept within the environmental specifications and applicable legislation.

Aspect /Method Statement	Objective	Target	Criteria
		Water: NWA Water Quality Guidelines. Ensure no incidents or accidents occur which negatively impact upon the surrounding environment.	The following variables are to be monitored: Dust (e.g. by using reused water) Noise (increase of 7dB above ambient is considered disturbing noise) Contaminated water (through dewatering operations, etc) Waste: waste manifests for waste disposal including waste sent for recycling
Erosion control	Prevent erosion and reduce potential impacts upon the surrounding environment.	Slopes > 1:1 must have additional anti-erosion mechanisms. No evidence of erosion. No evidence of disturbance outside of project area.	Method(s) of erosion control, including erosion of spoil material
Fire, Hazardous and Poisonous Substances	Impose a "no fire" rule on the entire project unless otherwise indicated in writing by the Transnet Project Manager. Reduce potential impacts in the event of a fire incident. To manage, mitigate and control the potential occurrence of an incident / accident involving hazardous and poisonous substances.	Zero (0) fires. Proof of annual update and approval of the fire management Method Statement. Proof of management review of fire preparedness and response before onset of the fire season. Storage of hazardous/flammable materials and substances to comply with national, provincial and local regulatory requirements	Handling and storage of hazardous substances Emergency spillage procedures and compounds to be used Fire management plan and emergency procedures in case of fire Use of herbicides, pesticides and other poisonous substances Methods for the disposal of hazardous building materials Material Safety Data Sheets to be included where applicable
Flora and Fauna	Preserve fauna and flora through control of construction activities, particularly in sensitive environments, and through search and rescue operations. Reduce the impact of the project on the surrounding vegetation during construction. Prevent infestation of alien species during construction.	No evidence of disturbance outside of project area. All sensitive environments are to be demarcated as no-go areas unless otherwise indicated by the Transnet Project Manager. No construction related activities or facilities allowed within sensitive environments, unless prior approval is attained from the Transnet Project Manager.	Implementation of measures to protect the flora and fauna identified within the project footprint.
Fuels and Fuel Spills	Manage and contain all refuelling activities to prevent and mitigate potential impacts.	All refuelling to occur within designated areas.	Methods of refuelling vehicles

Aspect /Method Statement	Objective	Target	Criteria
		All hydrocarbons to be contained within approved bunded facilities. Identified staff to undergo suitable spill clean-up training.	Details of methods for fuel spills and clean-up operations
Heritage	Limit and mitigate potential heritage impacts on chance findings should they occur.	No damage to heritage structures, unless proof of consultation with a heritage specialist and approval from the SAHRA is in place. Records of chance finds must be kept. Where chance finds are unearthed, proof of work being stopped immediately and proof of consultation with a heritage specialist and the SAHRA must be kept on site.	Measures to be implemented to identify, manage and protect "chance finds" and known items of historical or cultural value.
Noise	Reduce construction related noise affecting the surrounding environment.	Noise levels shall be monitored to ensure they comply with regulatory requirements. Noise generating activities shall not increase by more than 7dB above ambient noise levels. No complaints from I&AP's	Implement measures to reduce noise impacts generated through construction related activities
Rehabilitation	To rehabilitate impacted areas to a suitable land capability class similar to that of the surrounding environment. Rehabilitation will take existing land uses into consideration. Rehabilitation should start on sections immediately after work is completed.	Reinstatement of areas affected through construction related activities. The final placement of layers of soil on disturbed areas must match the pre-construction profile.	Rehabilitation of disturbed areas and re-landscaping after completion of construction related activities.
Solid and Liquid Waste Management	Implement measures to reduce, monitor and manage waste generation, whilst maximising recycling efficiency. The method statement must reflect the principles of integrated waste management as contained within the NEM: WA.	Ensure all waste products are disposed of at a registered waste landfill site designed to cater for said waste product. Proof of waste generated, reused, recycled and disposed of, including disposal certificates, must be kept on site. Contain all waste with in approved designated areas and stored in marked containers. Containers of hazardous waste and waste oils must be stored in a bunded, covered area. No evidence of contamination by waste. Bins provided at regular intervals.	Solid and liquid waste control and removal of waste from site. Methods for the disposal of vegetation, paper and plastics and/or building materials Methods for the recycling of oils etc, as applicable Keeping of waste manifests as proof of safe disposal General and hazardous waste types should be disposed of at the relevant registered waste disposal facilities

Aspect /Method Statement	Objective	Target	Criteria
		No evidence of litter.	
Social	Maximise social benefits and minimise negative social impacts	No complaints from affected landowners No project delays due to landowner interference All landowners signing release forms within 1 month of completion of the contract.	Methods for avoiding danger and causing the least possible inconvenience to the public (including pedestrians), traffic and vehicle traffic A clear method statement for works should be communicated with the affected businesses and other land owners
Sources of Materials	Source materials which have been legally mined or manufactured.	Provision of all Material Safety Data Sheets (MSDSs) for all products used on site.	Details of materials imported to the site. MSDS are to be included.
Topsoil and Subsoil Management	Manage the removal and stockpiling of topsoil and subsoil during the contract for use during rehabilitation.	Soil horizons (stockpile separately). Stockpiles should not be higher than 2 m. Stockpiles will be kept free of alien invasive species. No stockpiles shall be located within the 1:100 floodline. No stockpiles shall be located outside of areas indicated in the construction servitude diagrams.	Storage of topsoil and subsoil, including erosion prevention methods
Traffic	Minimise the impacts and extent of construction related traffic on the surrounding road network and environment, whilst maximising road user safety.	No accidents or incidents. No complaints from the public. Proof of notification of landowner for closure of access roads. Alternative access roads always provided at partial road closures and other traffic disruptions. Compliance with regulatory requirements.	To ensure construction related transport activities do not impact upon landowners and the surrounding environment. Ensure activities associated with the transportation of materials and staff are not negatively impacted upon by construction related requirements.
Training	Foster construction related skills transfer, environmental awareness, health and safety awareness, and materials and equipment skills.	Proof of training provided, including training materials that meet the requirements of Transnet. Proof of attendance of staff at training. Records of training evaluation results. Results must reflect that training has been effective.	Logistics for the environmental awareness course for all of the Contractor's employees and temporary labour, as well as for the Contractor's management staff.
Wash Areas	To ensure plant and equipment used on site are kept clean whilst containing and	No contamination of the receiving environment through the washing and cleaning of equipment and plant.	Location, layout, preparation and operation of all wash areas, including vehicle washing,

Aspect /Method Statement	Objective	Target	Criteria
	preventing the release of potential contaminants into the receiving environment.	Compliance with regulatory requirements.	workshop washing, paint washing and clearing Method for the treatment of wastewater prior to discharge

7.2. IMPLEMENTATION OF THE EMPR

The EMPr provides an integrated approach to environmental management. This approach is designed to guide the appropriate allocation of human resources, assign responsibilities, develop procedures and ensure project compliance with regulatory and best practice requirements.

Where conflict exists between this and any other document / specification, the following shall apply in descending order of applicability:

- DFFE approved EMPr and EA;
- Transnet Construction Environmental Management Plan (CEMP) and
- Standard Environmental Specifications

The Standards for Environmental Management below describes the aspect-specific requirements for achieving environmental best practice.

7.2.1. Standards for Environmental Management

The Contractor shall identify the potential environmental impacts that may occur as a result of his/her activities and accordingly prepare separate Method Statements describing how each of these impacts will be prevented or managed so that the standards set out in this document are achieved. These method statements will be prepared in accordance with the requirements set out in the EMPr.

The Contractor will comply with the standards described below.

7.2.2. Site Planning and Establishment

The Contractor shall establish his construction camps, offices, workshops, staff accommodation and any other facilities on the site in a manner that does not adversely affect the environment. These facilities must not be sited in close proximity to sensitive areas.

Site plan

Before the onset of construction, the Contractor shall submit to the Transnet Project Manager for his approval, plans of the exact location, extent and construction details of these facilities and the impact mitigation measures the Contractor proposes to put in place.

The Site Plan must as a minimum include but not be limited to:

- Detailed layout of the construction works areas including access roads, site offices, material laydown areas, temporary stockpile areas and parking areas
- Detailed locality and layout of all waste storage and handling facilities for litter, kitchen refuse and workshop-derived effluents
- Proposed areas for the stockpiling of topsoil and excavated spoil material
- Demarcation of the construction footprint including areas not to be disturbed by the development
- Location of sewage and sanitary facilities at the site offices and staff accommodation and at all localities on the site where there will be a concentration of labour. Sanitary arrangements should be to the satisfaction of the Construction Manager.

The site offices should not be sited in close proximity to steep areas. It is recommended that the offices, and in particular the ablution facilities, aggregate stockpiles, spoil areas and hazardous material stockpiles be located as far away as possible from the sea as possible.

7.2.3. Identification and establishment of suitable access routes/roads

Existing access routes to the construction/works areas must be used as far as possible. The building of access roads must be restricted to within the development footprint to prevent unnecessary disturbance of the surrounding environment. Access tracks must be maintained in a good condition at all times during construction to minimise erosion and dust generation.

7.2.4. Demarcation of site limits

Prior to the commencement of construction, the actual site to be developed must be clearly demarcated by means of highly visible barriers such as fences and orange snow netting.

All plant, material and equipment required for construction must be located within the designated areas. Laydown areas must be clearly demarcated within the site limits. No activities are allowed outside of the demarcated development footprint.

7.2.5. Eating Areas

The Contractor is responsible for providing temporary weatherproof and shaded areas within the works area to ensure that workers do not leave the site to eat during working hours. Refuse bags must be provided at all established eating areas.

7.2.6. Effluent Management

All effluent water from site shall be disposed of in a properly designed and constructed system, situated so as not to adversely affect water resources. Only domestic type wastewater shall be allowed to enter the designated system.

7.2.7. Sewage and Sanitation

The Contractor is responsible for providing adequate sanitary facilities to all workers on site and for enforcing the proper use of these facilities. Safe and effective sewage treatment will require one of the following sewage handling methods: conservancy tanks or the use of chemical toilets which are supplied and maintained by a suitably qualified sub-contractor. The type of sewage treatment will depend on the location of the site and the surrounding land uses, the duration of the contract and proximity (availability) of providers of chemical toilets.

Toilets shall be easily accessible and shall be positioned within walking distance (viz 50 m) from wherever employees are employed on the works. Use of open areas (i.e. the veld) shall not, under any circumstances, be allowed.

Chemical toilets shall be provided with locks and doors and shall be secured to prevent them from blowing over. The toilets shall also be placed in areas protected from flooding and high winds. The Contractor shall arrange for regular emptying of toilets and shall be entirely responsible for enforcing their use and for maintaining such facilities in a clean, orderly and hygienic condition to the satisfaction of the Transnet Project Manager.

The Contractor shall ensure that there are separate toilet facilities for male and females on site at a ratio of one facility for every 10 employees.

7.2.8. Waste Management

Waste is grouped into “general” or “hazardous”, depending on its characteristics. The classification determines handling methods and the ultimate disposal of the material.

General waste to be expected during construction includes the following:

- Trash (waste paper, plastics, cardboard, etc.) and food waste from offices, warehouses and construction personnel
- Uncontaminated construction debris such as used wood and scrap metal
- Uncontaminated soil and non-hazardous rubble from excavation or demolition

Hazardous waste means any waste that contains organic or inorganic elements or compounds that may, owing to its inherent physical, chemical characteristics, such as toxic, ignitable, corrosive, carcinogenic

or other properties or toxicological characteristics of that waste, have a detrimental impact on health and the environment.

The Contractor shall classify all wastes expected to be generated during the construction period. Examples of typical construction waste which could be expected on the site and how they should be classified are indicated in the following table:

WASTE	CLASSIFICATION	
	HAZARDOUS	GENERAL
Aerosol containers	X	
Batteries, light bulbs, circuit boards, etc.	X	X
Clean soil		X
Construction debris contaminated by oil or organic compounds	X	
Domestic waste		X
Empty drums (depends on prior use)	X	X
Empty paint and coating containers	X	
Explosive waste	X	
PCB waste	X	
Rubble (not contaminated by oil or organic compounds)		X
Waste Cable		X
Waste plastic		X
Waste paint and/or solvent		X
Waste oil	X	
Waste concrete		X
Waste containing fibrous asbestos	X	
Waste timber		X
Sewerage sludge	X	
Scrap metal		X
Chemically-derived sanitary waste	X	

A hierarchical control approach to waste management is encouraged. Waste should preferably be managed in the following order of preference:

1. Avoidance: using goods in a manner that minimises their waste components
2. Reduction: reduction of the quantity and toxicity of waste generated during construction
3. Re-use: removing an article from a waste stream for use in a similar or different purpose without changing its form or properties
4. Recycling: separating articles from a waste stream and processing them as products or raw materials
5. Recovery: reclaiming particular components or materials, or using the waste as a fuel
6. Treatment: processing of waste by changing its form or properties in order to reduce toxicity and quantity
7. Disposal: burial, deposit, discharge, abandoning or release of waste

The Contractor is responsible for the removal of all waste from site generated through the Contractors activities. The Contractor shall ensure that all waste is removed to appropriate licensed waste management facilities. (For the identification of an appropriate facility, the following source may be utilized: **www.sawic.org.za**).
The Contractor shall manage HAZARDOUS WASTE anticipated to be generated by his operations as follows:

- Characterise the waste to determine if it is general or hazardous
- Obtain and provide an acceptable container with correct classification label
- Place hazardous waste material in allocated container
- Inspect the container on a regular basis as prescribed by the Contractor's waste management plan
- Track the accumulation time for the waste
- Haul the full container to the disposal site
- Provide documentary evidence of proper disposal of the waste

The Contractor's Environmental Officer will work in conjunction with the Contractor's construction safety and industrial hygiene personnel to create a Hazardous Materials Management Program. This program will establish the necessary protocol for proper handling and removal of hazardous materials on the site. Information on each hazardous substance will be available to all persons on site in the form of Material Safety Data Sheets (MSDS). Training and education about the proper use, handling, and disposal of the material will be provided to all workers handling the material.
The Contractor's Environmental Officer must be informed of all activities that involve the use of hazardous substances to facilitate prompt response in the event of a spill or release.
The Contractor shall manage GENERAL WASTE that is anticipated to be generated by operations as follows:

- Determine if waste is non-hazardous and obtain containers for waste storage

- Notify waste hauler when container is full so that it can be removed and replaced with an empty
- No littering is allowed on site. In the event where staff mobility is high, refuse bags will be made available by the Contractor
- Provide documentary evidence of proper disposal of waste

The Contractor shall recycle GENERAL WASTE (as far as practically possible) that is anticipated to be generated by its operations as follows:

- Obtain and label recycling containers for the following (whichever relevant) and locate them within temporary office building and trailers:
  - Office Waste;
  - Aluminium;
  - Steel;
  - Glass;
  - Ferrous Metals;
  - Non Ferrous Metals; and
  - Waste Timber
- Establish recycled material collection schedule
- Arrange for full bins to be hauled away

Spent batteries, circuit boards, and bulbs, while non-hazardous, require separate storage, special collection and handling.
No burning, burying or dumping of waste of any kind will be permitted.
The Contractor shall quantify all waste disposed of, whether general or hazardous (including waste disposed of by any sub-contractors) and keep record of these quantities on site.

7.2.9. Workshops, equipment maintenance and storage

All vehicles and equipment must be kept in good working order to maximise efficiency and minimise pollution. Maintenance, including washing and refuelling of plant on site must be done at designated locations at workshop areas. These designated areas must be agreed with the Transnet Project Manager and Transnet Project Environmental Officer. The Contractor must ensure that no contamination of soil or vegetation occurs around workshops and plant maintenance facilities. All machinery servicing areas must be (impermeable) bunded. Drip trays should be used to collect used oil, lubricants and other during maintenance. Drip trays must be provided for all stationary plant. The use of “geyser drip trays” will not be permitted. Steel drip trays shall be of the appropriate size with sufficiently high side walls to contain a spill. Handles shall be placed on each of the four corners to provide safe handling. Washing of equipment should be restricted to urgent maintenance requirements only. Adequate wastewater collection facilities must be provided.

7.2.10. Vehicle and Equipment Refuelling

Stationary/Designated Refuelling

No vehicles or machines shall be serviced or refuelled on site except at designated servicing or refuelling locations. No oil or lubricant changes shall be made except at designate locations, or in case of breakdown or emergency repair.

The Contractor shall store fuel and oil at a secure area, which shall be bunded to contain 110% of the total volume within the bund and designed with an impervious layer or liner to prevent spillage from entering the ground. The bund shall not be constructed from bricks and mortar.

The Contractor shall provide details of its proposed fuel storage and fuelling facility to the Transnet Project Environmental Officer for approval. The design shall comply with the regulations of the National Environmental Management Act (Act 107 of 1998), National Water Act, (Act 36 of 1998), the Hazardous Substances Act, (Act 15 of 1973), and the Occupational Health and Safety Act, (Act 85 of 1993), Construction and Hazardous Chemical Substances Regulations and applicable SANS standards.

Mobile Refuelling

In certain circumstances, the refuelling of vehicles or equipment in a designated area is not a viable/practicable option and refuelling has to be done from a tank, truck or container moved around on site. In such circumstances, the Contractor may request approval from the Construction Manager to conduct mobile refuelling subject to the following control measures:

- Secondary containment equipment shall be in place. This equipment shall be sized to contain the most likely volume of fuel that could be spilt during transfer.
- Absorbent pads or drip trays are to be placed around the fuel inlet prior to dispensing.
- Mobile refuelling units are to be operated by a designated competent person.
- The transfer of fuel must be stopped prior to overflowing. Fuel tanks or refuelling equipment on vehicles may only be filled to 90% carrying capacity.
- Mobile fuelling tanks must be stored in an area where they are not susceptible to collisions. The fuel storage area must be located away from drainage channels.
- Mobile refuelling operations shall not take place within 7.5 meter from structures, property lines, public ways or combustible storage.
- All mobile refuelling tanks are to be properly labelled and fire extinguishers shall be located near the fuel storage areas. These extinguishers must be of a suitable type and size.

7.2.11. Spill Response

The Contractor shall have adequate spill response materials/equipment on site which must be aligned with the volumes of hazardous substances used on site and the risk of pollution to sensitive environmental attributes.

The Contractor shall provide details for approval by the Transnet Project Manager of its spill response plan in the event of any spills of fuel, oils, solvents, paints or other hazardous materials. The plan will show measures to be taken in removing contaminated material from site and demonstrate complete removal of contamination.

The Contractor shall instruct construction personnel on the following spill prevention and containment responsibilities:

- Immediately repair all leaks of hydrocarbons or chemicals
- Take all reasonable means to prevent spills or leaks
- Do not allow sumps receiving contaminated water to overflow
- Prevent storm water runoff from contamination by leaking or spilled drums of oil or chemicals
- Do not discharge oil or contaminants into storm water or sewer systems

If a spill occurs on land, the Contractor must:

- Immediately stop or reduce the spill
- Contain the spill
- Recover the spilled product
- Remediate the site
- Implement actions necessary to prevent the spill from contaminating groundwater or off-site surface water
- Dispose of contaminated material to a location designated thereto

Any spill to water has the potential to disperse quickly, therefore, the spill must be contained immediately using appropriate containment equipment.
If a spill to water occurs, the Contractor must:

- Take immediate action to stop or reduce the spill and contain it
- Notify the appropriate on-site authorities
- Implement actions necessary to prevent the spread of the contamination by deploying booms and/or absorbent material
- Recover the spilled product
- Properly dispose of spilled material

7.2.12. Spray Painting

Spray painting and sandblasting should be kept to a minimum. All painting should, as far as practicable, be done before equipment and material is brought on site. Touch-up painting is to be done by hand painting or by an approved procedure. A Method Statement shall be submitted to the Transnet Project Environmental Officer for approval.
The relevant Contractor will inform his Environmental Officer of when and where spray painting or sandblasting is to be carried out prior to commencement of work. The Environmental Officer will monitor these activities to ensure that adequate measures are taken to prevent contamination of the soil.
If the area is in confined or high (elevated) areas, a protection plan must be issued for approval by TNPA.

7.2.13. Dust Management

Material in transit should be loaded and contained within the load bin of the vehicle in such a way as to prevent any spillage onto the roads and the creation of dust clouds. If necessary, the load bin of the vehicle shall be covered with a tarpaulin to prevent dust.

Dust is to be controlled on unpaved access roads and site roads using sprayed water. Contractors are responsible for managing dust generated as a result of their activities.

Some dust control measures which are normally applied during maintenance are presented in this section for inclusion by the Contractor in his Dust Control Method Statement:

- Operate vehicles within speed limits, where no speed limit has been specified the limit shall be 20km/h
- Wash paved surfaces within the works area twice a week
- Minimise haulage distances
- Apply water to gravel roads with a spraying truck when required
- Environmentally friendly soil stabilisers may be used as additional measures to control dust on gravel roads and construction areas
- Dust suppression measures will also apply to inactive works areas.
- Building material being transported by trucks must be suitably moistened or covered to prevent dust generation
- Minimise disturbance of natural vegetation during right-of-way maintenance (e.g. transmission lines and erection of fences) to reduce potential erosion, runoff, and air-borne dust
- Implement a system of reporting excessive dust conditions by maintenance personnel (as instructed through Environmental Awareness Training)
- Water for dust control shall only be taken from approved sources.

11.10 Storm water and Dewatering Management

The Contractor shall be aware that, apart from runoff from overburden emplacements and stock piles, storm water can also be contaminated from batch plants, workshops, vehicle wash-down pads, etc., and that contaminants during maintenance may include hydrocarbons from fuels and lubricants, sewerage from employee ablutions and excess fertiliser from rehabilitated areas, etc.

The Contractor shall take note that discharges to controlled waters such as the sea, groundwater or to sewerage systems are controlled under South African Water Legislation. The following specific measures are required:

• Temporary drainage must be established on site during the maintenance period until permanent drainage is in place. Contractors are responsible for maintaining the temporary drainage in their areas. Contractors must provide secondary drainage that prevents erosion

• Contractors must employ good housekeeping in their areas to prevent contamination of drainage water

• The Contractor shall clear stagnant water

• The Contractor shall ensure that no contaminated surface water flows off-site as a result of Contractor operations. Silt traps shall be constructed to ensure retention of silt on site and cut-off ditches shall be constructed to ensure no runoff from the site except at points where silt traps are provided. The Contractor shall be responsible for checking and maintaining all silt traps for the duration of the project.

• If applicable, the Contractor shall be responsible for collection, management, and containment within the site boundaries of all dewatering from all general site preparation activities. The dewatering water shall be contained within the site boundaries by sequentially pumping or routing water to and from sub-areas within the site as the construction activities proceed. No discharge/dewatering to off-site land or surface water bodies will be allowed

• On-site drainage shall be accomplished through gravity flow. The surface drainage system shall consist of mild overland slopes, ditches, and culverts. The graded areas adjacent to buildings shall be sloped away with a 5% slope. Other areas shall have a minimum slope of 0,2% or as otherwise indicated
• Ditches shall be designed to carry a 25-year storm event with velocities in accordance to minimise erosion. Erosion protection shall consist of suitable stabilising surfaces in all ditches
• Culverts shall be designed to ensure passage of the 50-year storm peak runoff flow

7.2.14. Erosion Control

Both structural and non-structural (vegetative) erosion control measures will be designed, implemented, and properly maintained in accordance with best management practices which will include the following:

- Scheduling of activities to minimise the amount of disturbed area at any one time
- Implementation of re-vegetation as early as feasible
- Limiting traffic and/or avoidance thereof on access roads and areas to be graded to the extent feasible at drainage ditches
- Compacting loose soil as soon as possible after excavation, grading, or filling
- Using silt fences, geo-textiles, temporary rip-rap, soil stabilisation with gravel, diversionary berms or swales, small sedimentation basins, and gravelled roads to minimise transport of sediment
- Implementing the erosion and sedimentation control plan and ensuring that construction personnel are familiar with and adhere to it
- Managing runoff during construction
- The Contractor shall be responsible for checking and maintaining all erosion and sedimentation controls

7.2.15. Rehabilitation

Contractors shall rehabilitate the entire site upon completion of work. A rehabilitation plan will be submitted to the Construction Manager for approval at least six weeks before completion. The following are critical issues to be included in the rehabilitation plan:

- Details of soil preparation procedures including proposed fertilisers or other chemicals being considered for use
- A list of the plant species that will be used in the rehabilitation process. Note that these should all be indigenous species, and preferably species that are endemic to the area. The assistance of an appropriately qualified botanist should be sought in developing this list
- Procedures for watering the planted areas (frequency of watering, methodology proposed etc).

- An indication of the monitoring procedures that will be put in place to ensure the successful establishment of the plants (duration and frequency of monitoring, proposed criteria for declaring rehabilitation as being successful)
- Procedures for the prevention of the establishment and spread of alien invasive species.

7.2.16. Noise Management

- Keep all equipment in good working order
- Operate equipment within its specification and capacity and don't overload machines
- Apply regular maintenance, particularly with regards to lubrication
- Operate equipment with appropriate noise abatement accessories, such as sound hoods
- Sensitive social receptors shall be notified of any excessive noise-generating activities that could affect them.
- Working hours must be kept between 07:00 to 17:00 unless otherwise communicated to adjacent land occupants.
- Ensure that the potential noise source will conform to the South African Bureau of Standards recommended code of practice, SANS 10103:2004, so that it will not produce excessive or undesirable noise when released
- All the Contractor's equipment shall be fitted with effective exhaust silencers and shall comply with the South African Bureau of Standards recommended code of practice, SANS 10103:2004, for construction plant noise generation
- All the Contractor's vehicles shall be fitted with effective exhaust silencers and shall comply with the Road Traffic Act, (Act 29 of 1989) when any such vehicle is operated on a public road
- If on-site noise control is not effective, protect the victims of noise (e.g. ear-plugs) by ensuring that all noise-related occupational health provisions are met. (Occupational Health and Safety Act, (Act 85 of 1993).

7.2.17. Protection of heritage resources

Archeological Sites

If an artefact on site is uncovered, work in the immediate vicinity shall be stopped immediately. The Contractor shall take reasonable precautions to prevent any person from removing or damaging any such article and shall immediately upon discovery thereof inform the engineer of such a discovery. The South African Heritage Resources Agency (SAHRA) is to be contacted and will appoint an archaeological consultant. Work may only resume once clearance is given in writing by the archaeologist.

Graves and middens

If a grave or midden is uncovered on site, or discovered before the commencement of work, all work in the immediate vicinity of the graves/middens shall be stopped and the Transnet Project Manager informed of the discovery. The SAHRA should be contacted and in the case of graves, arrangements made for an undertaker to carry out exhumation and reburial. The undertaker will, together with the SAHRA, be responsible for attempts to contact family of the deceased and for the site where the exhumed remains can be re-interred.

7.2.18. Fire prevention

Fires shall only be allowed in facilities or equipment specially constructed for this purpose. A firebreak shall be cleared and maintained around the perimeter of the camp and office sites. All conditions incorporated in the requirements of the Occupational Health and Safety Act shall be implemented.

7.2.19. Water Protection and Management

No water shall be abstracted from any water resource (stream, river, or dam) without the express permission of the Construction Manager. Such permission shall only be granted once it can be shown that the water is safe for use, that there is sufficient water in the resource to meet the demand, and once permission has been obtained from the Department of Water Affairs and Sanitation in accordance with the requirements of the National Water Act (Act 36 of 1998).

Water for human consumption shall be available at the site offices and at other convenient locations on site. The generally acceptable standard is that a supply of drinking water shall be available within 200m of any point on the construction site.

The Contractor shall keep record of the quantities of water used during construction (including use by sub-contractors), irrespective of the purpose of use.

All water released into the receiving environment and potentially containing contaminants shall be monitored to ensure compliance with the requirements of the National Water Act. All samples monitored shall be sent to a SANS 17025 certified laboratory.

7.2.20. Protection of Fauna

On no account shall any hunting or fishing activity of any kind be allowed. This includes the setting of traps, or the killing of any animal caught in construction works.
On no account shall any animal, reptile or bird of any sort be killed. This specifically includes snakes or other creatures considered potentially dangerous discovered on site. If such an animal is discovered on site an appropriately skilled person should be summoned to remove the creature from the site. Consideration should be given to selection and nomination of such a person prior to site establishment. If no-one is available, training should be provided to at least two site staff members.
The Contractor shall provide adequate facilities for all his staff so that they are not encouraged to supplement their comforts on site by accessing what can be taken from the natural surroundings. The Contractor shall ensure that energy sources are available at all times for construction and supervision personnel for heating and cooking purposes.

7.2.21. Environmental Awareness Training

An Environmental Awareness Program is considered a necessary part of the EMPr for the Project. Training of the appropriate construction personnel will help ensure that all environmental regulations and requirements are followed which must be defined in the relevant Method Statement to be prepared by the Contractor.
Objectives of environmental awareness training are:

- Environmental Management – protecting the environment from the effects of construction by making personnel aware of sensitive environmental resources.
- Regulatory compliance – complying with requirements contained in project – specific permit conditions, also complying with requirements in regional and local regulations.
- Problem recognition and communication – training personnel to recognise potential environmental problems, i.e. spills, and communicate the problem to the proper person for solution.
- Liability control - non-compliance with regulatory requirements can lead to personal and corporate liability.

The Contractors must ensure that their employees and any third party, who carries out all or part of the Contractors' obligations, are adequately trained with regard to the implementation of the EMPr and the general environmental legal requirements and obligations. Training should be conducted by Contractor's Environmental Officer or Independent Environmental Control Officer (ECO) where necessary.
Environment and health awareness training programmes should be targeted at three distinct levels of employment, i.e. the executive, middle management and labour. Environmental awareness training programmes should contain the following information:

- The names, positions and responsibilities of personnel to be trained;
- The framework for appropriate training plans;
- The summarised content of each training course; and
- A schedule for the presentation of the training courses.

The PEO and CEO must ensure that records of all training interventions are kept in accordance with the record keeping and documentation control requirements as set out in this EMPr. The training records must verify each of the targeted personnel's training experience.
The Contractor must ensure that adequate environmental training takes place. All employees must be given an induction presentation on environmental awareness and the content of the EMPr. The presentation needs to be conducted in the language of the employees to ensure it is understood. The environmental training must, as a minimum, include the following:

- The importance of conformance with all environmental policies;
- The environmental impacts, actual or potential, of their work activities;
- The environmental benefits of improved personal performance;
- Their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirement of the Agency's environmental management systems, including emergency preparedness and response requirements;
- The potential consequences of departure from specified operating procedures;
- The mitigation measures required to be implemented when carrying out their work activities;
- Environmental legal requirements and obligations;
- Details regarding floral/faunal species of special concern and protected species, and the procedures to be followed should these be encountered during the construction of approach roads or construction camps;
- The importance of not littering;
- The importance of using supplied ablution facilities;

- The need to use water sparingly;
- Details of and encouragement to minimise the production of waste and re-use, recover and recycle waste where possible; and the
- Details regarding archaeological and/or historical sites which may be unearthed during construction and the procedures to be followed should these be encountered.
- The Contractor shall present environmental awareness programmes on a weekly/bi-monthly basis and keep record of all the environmental related training of the personnel.
- Acceptable behaviour with regard to flora and fauna;
- Management and minimising of waste, including waste separation;
- Maintenance of equipment to prevent the accidental discharge or spill of fuel, oil, lubricants, cement, mortar and other chemicals;
- Responsible handling of chemicals and spills;
- Environmental emergency procedures and incident reporting; and
- General code of conduct towards port users and tenants.

The Transnet Project Environmental Officer may be requested to provide additional training (in a first language) on-site regarding environmental aspects that are unclear to the personnel. A translator may be required and requested to assist in this additional training. The cost for the translator will be borne by the Contractor. The Contractor shall implement the training programme at own cost. Training shall be undertaken prior to the commencement of maintenance related activities and on a six monthly follow up roster thereafter.
In the case of permanent staff the Contractor shall provide evidence that such induction courses have been presented. In the case of new staff (including contract labour) the Contractor shall inform the Engineer when and how he intends concluding his environmental training obligations.

7.2.22. Handling and Batching of Concrete and Cement

Concrete batching shall only be conducted in demarcated areas which have been approved by the Transnet Construction Manager.
Such areas shall be fitted with a containment facility for the collection of cement-laden water. This facility shall be bunded and have an impermeable surface protection so as to prevent soil and groundwater contamination. Drainage of the collection facility will be separated from any infrastructure that contains clean surface runoff.
The batching facility will not be placed in areas prone to floods or the generation of stagnant water. Access to the facility will be controlled so as to minimise potential environmental impacts.
Hand mixing of cement and concrete shall be done on mortarboards and/or within the bunded area with impermeable surface or concrete slab.
Bulk and bagged cement and concrete additives will be stored in an appropriate facility at least 10m away from any watercourses, gullies and drains.
Waste water collected in the containment facility shall be left to evaporate. The Contractor shall monitor water levels to prevent overflows from the facility. Water can be pumped into sealed drums for temporary storage and must be disposed of as liquid hazardous waste.

All concrete washing equipment, such as shovels, mixer drums, concrete chutes, etc. shall be done within the washout facility. Water used for washing shall be restricted as far as practically possible.
Ready-mix concrete trucks are not allowed to wash out anywhere other than in an area designated for this purpose.

The Contractor shall periodically clean out hardened concrete from the wash-out facility or concrete mixer, which can either be reused or disposed of as per accepted waste management procedures.
Empty cement and bags, if temporarily stored on site, must be collected and stored in weatherproof containers. Used cement bags may not be used for any other purpose and must be disposed of on a regular basis in accordance with the Contractor's solid waste management system.
Sand and Aggregates containing cement will be kept damp to prevent the generation of dust.
Concrete and cement or any solid waste materials containing concrete and cement will be disposed of at a registered disposal facility. Where disposal facilities for general waste are utilised, written consent from the relevant municipality must be obtained.

7.2.23. Stockpiling, Soil Management and Protection of Flora

- Clearance of vegetation shall be restricted to that which is required to facilitate the execution of the works
- Stockpiling may only take place in designated areas indicated on the approved site layout plan. Sensitive areas shall be avoided in this regard.
- The Contractor shall measure the extent of all areas cleared for construction purposes and keep this figure updated.
- Any area to be used for stockpiling or material laydown shall be stripped of all topsoil.
- Vegetation clearance shall occur in a planned manner, and cleared areas shall be stabilised as soon as possible.
- The detail of vegetation clearing shall be subject to the Construction Manager's approval and shall occur in consultation with the Transnet Project Environmental Officer.
- Stockpiles must be positioned in areas sheltered from the wind and rain to prevent erosion and dispersion of loose materials.
- Stockpiled soil shall be protected by adequate erosion-control measures.
- Soil stockpiles shall be located away from drainage lines, watercourses and areas of temporary inundation. Topsoil shall be stockpiled separately from other materials and kept moist.
- Excavated subsoil, where not contaminated, must be used for backfilling and topsoil for landscaping and rehabilitation of disturbed areas.
- Where topsoil has become mixed with subsoil or is not up to the original standard, fertiliser or new topsoil shall be provided by the Contractor.
- Stockpiles (excluding ballast stockpiles) shall not exceed 2m in height unless otherwise permitted by Transnet.
- No vegetation located outside the construction site shall be destroyed or damaged.
- As far as is reasonably practicable, existing roads must be used for access to site and right of way.
- Before site clearance takes place, vegetation surveys will be conducted and protected species identified.
- No protected plant species shall be removed without written consent from the relevant authorities.
- The development of new embankments or fill areas must be undertaken in consultation with the Transnet Project Environmental Officer.

- No dumping of solid waste or refuse shall not be allowed within or adjacent to areas of natural vegetation.
- The Contractor shall identify and eradicate all declared alien and invasive plant species occurring on site.

7.2.24. Traffic Management

- Vehicles are not permitted to leave access roads.
- Turning of vehicles should only take place within a clearly demarcated "turn area" located within the approved construction footprint
- The contractor must co-ordinate the loading and offloading of material during the construction phase so as to ensure that vehicular movement is in one direction only at any one time and that side-tracks are not created on the site.
- Vehicles should only be parked within designated parking areas as demarcated on the site layout plan

7.2.25. Transportation of Materials

The Contractor is responsible for ensuring that all suppliers and delivery drivers are aware of procedures and restrictions (e.g. no-go areas) in terms of the EMPr. Material must be appropriately secured to ensure safe passage between destinations during transportation. Loads must have appropriate cover to prevent spillage from the vehicles. The Contractor will be held responsible for any clean-up resulting from the failure to properly secure transported materials.

7.2.26. Borrow Pits and Quarries

- The contractor shall make use of commercial suppliers for all rock and sand raw materials.
- The Contractor shall ensure that any supplier is in possession of the required permit/license and keep record of the quantity of material supplied.
- The Contractor will not make direct use of any borrow pits and quarries unless he has obtained written approval from the Construction Manager and Method Statement has been submitted and approved.
- The abovementioned Method Statement will provide the detailed description of the location of the borrow pits and/or quarries and the procedures that will be followed to adhere to any pertinent national or local legislation (e.g. mineral extraction, safety and noise levels).

7.2.27. Social and Labour Issues

- The criteria for and selection of labourers, sub-contractors and suppliers for the project shall demonstrate preference for the local community and shall be aligned with the criteria set by Transnet in appointing the Contractor. The Contractor shall keep records of the identity of all staff.
- Under no circumstances shall the Contractors engage in formal discussions with landowners without prior consent by the Transnet Project Manager.

- No activity on private property shall be allowed without written consent by the relevant landowner and the Transnet Project Manager.
- Any damage to private property caused by the Contractor during the construction period, shall be repaired to the satisfaction of the Transnet Construction Manager.
- The Contractor shall keep record of any complaint raised during the construction period relating to the Contractor's activities.
- No job-seekers shall be allowed on site.

7.2.28. Energy Management

The Contractor shall measure and keep updated records of the following:

- Electricity consumption (to be measured in Watt Hours)
- Fuel consumption (to be measured in litres)

The Contractor shall utilize energy saving lights / devices within all buildings under his control.

7.2.29. Handling, Storage and Management of Hazardous Substances

- All hazardous materials/substances shall be stored in a secured, designated area that is fenced and has restricted entry.
- All storage shall take place using suitable containers to the approval of the Transnet Project Manager.
- All hazardous liquids shall be located in a secure, demarcated area and an adequate bund wall (110% of the total volume stored) shall be provided. The floor and wall of the bund area shall be impervious to prevent infiltration of any spilled/leaked liquids into the soil.
- No possible spillages or accumulated stormwater within this bunded area will be allowed to be flushed from the bund into the surrounding area. All fluids accumulated within the bunded area shall be removed and disposed of in accordance with the EMPr and applicable legislation.
- Hazard signs indicating the nature of the stored materials shall be displayed on the storage facility or containment structure.
- Weigh bills of hazardous substances shall be sourced from suppliers and kept on site for inspection by the Transnet Project Environmental Officer.
- The Contractor must provide a method statement detailing the hazardous substances that are to be used during construction, as well as the storage, handling and disposal procedures for each substance. Emergency procedures in the event of misuse or spillage that might negatively affect the environment must be specified.

8. SPECIFIC IMPACT MITIGATION OR MANAGEMENT MEASURES

This section outlines proposed management or mitigation measures that will be taken to address the environmental impacts that have been identified in the EIA Report.

8.1. PLANNING & DESIGN PHASE

Table 10: Impacts and mitigation measures associated with the proposed development planning phase.

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
8.1 A	Policy and Legislative Context	There is a risk of non-compliance with the environmental laws and policies of South Africa which could lead to damage to the aquatic and terrestrial environment, unnecessary delays in construction activities, and potentially criminal cases, based on the severity of the noncompliance, being brought against the Applicant and the appointed contractors.	TRANSNET Contractor	Ongoing	• Application for required environmental authorisations and licences prior to commencement of construction. • The applicant must appoint an ECO to monitor compliance throughout construction by undertaking monthly audits until rehabilitation is completed. • The contractor's appointed EO must be on site on a daily basis to monitor implementation of the environmental specifications contained in this EMPr and all authorisations • Copies of all applicable licenses, permits and managements plans (EA, EMPr,, Permits, etc.) must be always available on-site. • Should ECO audits identify that additional authorisation is required during construction due to non-compliance or deviation from the approved EMPr, the contractor will be responsible for the process of EA application. • Environmental Awareness Training must be provided by the ECO at the start of the construction phase all personnel involved in the project.	• All licences on file. • ECO Reports • Environmental Awareness Training registers
8.1 B	Scheduling of Construction	Inappropriate construction scheduling that does not take into account the seasonal requirements of the aquatic environment.	TRANSNET Contractor	Ongoing	• A clear site layout plan, with a programme should be developed prior construction commencement • The duration of the construction phase should be kept to a minimum, to reduce the period of disturbance on fauna; and floral including business operations directly and indirectly affected	• Construction programme • Proof of engagement with affected business

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					• Wherever possible, construction activities should be planned to be undertaken during the driest part of the year and low-tides to minimize marine environment sedimentation due to excavations and stockpiles of fine material, etc. • • When not possible, sediment traps or equivalent structures should be considered and implemented as far as practically possible for stormwater containment to ensure the watercourses are not negatively impacted by construction activity	• Photographic evidence of silt/sediment traps, of equivalent installed
8.1 B	Socio-Economic	Job Creation	TRANSNET Contractor	Ongoing	• Use of local labour and Small to Medium Enterprises is recommended whenever it is possible. • Promote use of local content within the existing legal requirements	• Labour report of the Community Liaison Officer

8.2. CONSTRUCTION & OPERATIONAL PHASE

Table 11: Impacts and mitigation measures associated with the proposed development Construction and operational phase

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
8.2 A	Policy and Legislative Context	There is a risk of non-compliance with the environmental laws and policies of South Africa which could lead to damage to the aquatic and terrestrial environment, unnecessary delays in construction activities, and potentially criminal cases, based on the severity of	TRANSNET Contractor	Ongoing	• Application for required environmental authorisations and licences prior to commencement of construction. • The applicant must appoint an ECO to monitor compliance throughout construction by undertaking monthly audits until rehabilitation is completed. The contractor's appointed DEO must be on site on a daily basis to monitor implementation of the environmental	• All licences on file. • ECO Reports • Environmental Awareness Training registers

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
		the noncompliance, being brought against the Applicant and the appointed contractors.			specifications contained in this EMPr and all authorisations • Copies of all applicable licenses, permits and managements plans (EA, EMPr, Water Use Licenses, Permits, etc.) must be always available on-site. Should ECO audits identify that additional authorisation is required during construction due to non-compliance or deviation from the approved EMPr, the contractor will be responsible for the process of EA application. • Environmental Awareness Training must be provided by the ECO at the start of the construction phase all personnel involved in the project.	
8.2 B	Scheduling of Construction	Inappropriate construction scheduling that does not take into account the seasonal requirements of the aquatic environment.	TRANSNET Contractor	Ongoing	• A clear site layout plan, with a programme should be developed prior construction commencement • The duration of the construction phase should be kept to a minimum, to reduce the period of disturbance on fauna; and floral including business operations directly and indirectly affected • Wherever possible, construction activities should be planned to be undertaken during the driest part of the year and low-tides to minimize marine environment sedimentation	• Construction programme • Photographic evidence of silt/sediment traps installed

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					due to excavations and stockpiles of fine material, etc. • When not possible, sediment traps or equivalent structures should be considered and implemented as far as practically possible for stormwater containment to ensure the watercourses are not negatively impacted by construction activity	
8.2 C	Marine Environment	Impacts due to the ingress of non-hazardous solid waste into the port	TRANSNET Contractor	Ongoing	• The construction contractor must provide comprehensive and compulsory environmental awareness training for the site workforce. • The training must sensitise construction personnel to the negative environmental impacts of non-hazardous solid waste (especially plastic waste) on the marine environment and the consequent need to limit the ingress of such waste into the port. • Environmental awareness training should be ongoing through the life of the project for the workforce involved in the project since inception and must be provided to contractor personnel appointed and brought onsite after project inception (e.g. sub-contractors).	• Training records • Waste bins on site • Disposal records

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					• A reduce, reuse, recycle waste philosophy should be followed at the construction site. • The intentional disposal of non-hazardous solid waste into the port must be strictly prohibited. Procedures to remove personnel from site if they have received environmental awareness training yet intentionally dispose of non-hazardous solid waste into the port should be formulated, and if necessary, implemented. • Construction personnel must be encouraged to collect plastic litter and other non-hazardous solid waste they see in the construction area, even if it does not originate from the construction site. • If necessary, litter sweeps should be carried out across the construction site. • If non-hazardous solid waste from the construction site enters the port this must be recovered immediately where practicable. This might be difficult from the quayside, but pool cleaning nets can be used for this purpose if a construction support vessel is available. • Onsite temporary storage areas for non-hazardous solid waste must be	

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					clearly demarcated, signposted, and maintained. These should ideally be situated as far as practicable from the water's edge. • Bins, skips, and/or other receptacles for the temporary storage of non-hazardous solid waste must be sealed and secured to avoid them becoming a source of litter in the port, noting the proposed project area is often characterised by gale force winds that can blow plastic and other light non-hazardous solid waste from unsealed receptacles, and can blow light waste receptacles over. • Non-hazardous solid waste receptacles must be vermin proof. • Non-hazardous solid waste must be regularly removed from the construction site and disposed at a registered waste disposal site in accordance with national and local waste legislation, using a licensed waste disposal contractor. The waste contractor must provide proof the waste was disposed at a registered waste disposal site. The contractor should keep such records onsite for the benefit of an Environmental Control Officer.	

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					• Non-hazardous solid waste receptacles must not be washed onsite unless the wash water is captured and disposed to sewer. The washing water must not be allowed to enter surface runoff channels or stormwater drains as these will flow to the port. Onsite temporary storage areas for non-hazardous solid waste must be clearly demarcated, signposted, and maintained. These should ideally be situated as far as practicable from the water's edge. • Bins, skips, and/or other receptacles for the temporary storage of non-hazardous solid waste must be sealed and secured to avoid them becoming a source of litter in the port, noting the proposed project area is often characterised by gale force winds that can blow plastic and other light non-hazardous solid waste from unsealed receptacles, and can blow light waste receptacles over. • Non-hazardous solid waste receptacles must be vermin proof. • Non-hazardous solid waste must be regularly removed from the construction site and disposed at a registered waste disposal site in	

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					accordance with national and local waste legislation, using a licensed waste disposal contractor. The waste contractor must provide proof the waste was disposed at a registered waste disposal site. The contractor should keep such records onsite for the benefit of an Environmental Control Officer. • • Non-hazardous solid waste receptacles must not be washed onsite unless the wash water is captured and disposed to sewer. The washing water must not be allowed to enter surface runoff channels or stormwater drains as these will flow to the port.	
8.2 D		Environmental deterioration due to spillages from portable toilets	Contractor	Weekly	• Portable toilets must be maintained in a good, clean condition. • Portable toilets must be regularly checked for signs of leaks. • Should a leak be found a sorbent material must be used to contain and absorb the waste. • The portable toilet should be removed and replaced as soon as is practically possible and the sorbent material used to clean the leaked waste must be treated as hazardous waste and disposed accordingly. • Portable toilets must be placed in areas where there is little possibility	• Clean toilets • No spills • Safe disposal slipe

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					of them being toppled over by the gale force winds that are common in the proposed project area. If necessary, portable toilets must be secured to the ground to avoid them being toppled over by wind or any other cause. • Portable toilets must be placed in areas where there is little possibility of potential leaks or overflows reaching the port. • Portable toilets should not be positioned near surface (stormwater) runoff drains or surface water drainage areas as these will inevitably lead to the port. If these controls are not possible then portable toilets must have secondary containment. • Portable toilet waste must be regularly removed from site by a licensed waste disposal contractor and disposed at a permitted wastewater treatment works. • The waste disposal contractor must provide proof of that the waste was disposed at a registered wastewater treatment works. • The contractor should keep such records onsite. • • If other forms of temporary sanitary facilities are provided onsite, such	

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					as showers, the water must either be adequately contained in storage devices until it can be removed from the site or these must be connected to the existing sewer infrastructure.	
8.2 E	Geological impact	Impacts to soil, sediment, and geology	Contractor	Ongoing	• As little geological material should be removed or brought onto the construction site as possible, and the geological material disturbed should be restricted to the minimum.	• Imported material log • Site demarcation
8.2 F	Water and sediment quality	Deterioration in water and sediment quality due to hazardous material spills and leaks	Contractor	Ongoing	General • A Hazardous Material Spill Response and Contingency Plan must be developed by the Contractor/s. • The Hazardous Material Spill Response and Contingency Plan must identify appropriate response procedures in the event of a hazardous material spill on land and in water. The plan must provide specific responses for spills of different types of hazardous materials that may be handled onsite. • Hazardous materials must be stored and handled in accordance with appropriate legislation and standards, including the Hazardous Substances Act (Act No. 15 of 1973) and Occupational Health and Safety Act (No. 85 of 1993).	• Material Spill Response and Contingency Plan • Materials register • MSDS • Vehicle and equipment inspection registers • Visual inspection of storage areas • Environmental awareness training records • Site drainage plan

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					• Hazardous material spills and leaks must be reported immediately. The contractor personnel to whom a spill or leak must be reported must be outlined in the Hazardous Material Spill Response and Contingency Plan. The plan must also outline subsequent lines of reporting as deemed necessary (e.g. Transnet National Ports Authority, relevant authorities). • • Spill containment and clean-up kits must be readily available onsite in areas where there is a risk of a hazardous material spill or leak and must be appropriate to the type of possible spill or leak. • • Responsible and trained personnel must be available to deal with hazardous material spills and leaks. Training/drills must be implemented to enable personnel to respond appropriately to hazardous material spills and leaks. • • Appropriate methods for the disposal of cleaned up spilled material and clean-up materials must be identified in the Hazardous Material Spill Response and Contingency Plan – this material must not be disposed with 'normal'	

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					waste but rather at an appropriately licensed waste disposal site. • • The intentional disposal of hazardous materials into the port or into stormwater drains and surface drainage channels is strictly prohibited. • Procedures to remove contractor personnel from site if they have received environmental awareness training yet are observed intentionally disposing of hazardous waste into the port or into stormwater or other drainage channels that lead to the estuary should be formulated, and if necessary, implemented. • Construction personnel must be educated that stormwater drains lead to aquatic ecosystems, and in the case of the construction site for the proposed project these will lead to the port. • • All construction personnel must receive comprehensive environmental awareness training and must be sensitised to the negative environmental impacts of hazardous material spills and leaks on the environment. Environmental awareness training must be ongoing through the life of the project.	

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					• • Only authorised and trained personnel must be allowed to handle hazardous materials. • Landside • • Develop a site drainage plan that shows the positions of sewers, surface drainage channels, and stormwater drains, including where the channels and drains flow into the port. • • Only authorised and trained personnel must be allowed to refuel or lubricate construction machinery, equipment, and vehicles, and to perform emergency repairs of machinery, equipment, and vehicles onsite. • Refuelling of construction machinery, equipment, and vehicles, and emergency repairs of the same onsite must take place in areas demarcated for this purpose. • These areas must be as far as practically possible from the edge of the sea, on hard topped (impermeable) surfaces, and must include measures to prevent the migration of possibly spilled or leaked hazardous material from the area (e.g. bunding, drip trays). • If construction machinery and equipment cannot be easily	

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					removed for refuelling but this must be down from a bowser, a drip tray must be used to capture any spillage that might occur. • No routine maintenance (servicing) of construction machinery, equipment, and vehicles should be performed onsite. However, it is recognised that it might not be possible to easily move certain construction machinery and equipment that might require emergency repairs to a dedicated repair site (e.g. pile driving machinery). In this case emergency repairs should be allowed onsite, but the contractor and Transnet National Ports Authority must reach agreement in this regard. • Construction machinery, equipment, and vehicles must be properly maintained and regularly checked for leaks of hazardous materials. No vehicles should be allowed onsite if they have visible leaks, including the vehicles of suppliers. • Hydraulically operated machinery should ideally use a synthetic biodegradable hydraulic oil. • Hazardous material storage containers must be labelled, sealed, and stored in accordance with	

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					Material Safety Data Sheet requirements. • Only authorised and trained personnel must be allowed access to areas where hazardous materials are stored or used. • Personnel with responsibilities for the use, handling, and storage of hazardous materials must be provided with competency training and environment, health, and safety training. • The training should enable the personnel to perform their tasks efficiently without resulting in any contamination, as well as knowing the appropriate actions to take in response to an emergency (e.g. fire) or spill incidents. • • All hazardous materials must be stored with adequate spill protection (bunding) in secured (locked) and covered areas to prevent wash-off of hazardous material by rainfall/surface runoff as far as is practicable (fuel bowsers, for example, might need to be stored in the open). Secondary containment (including bunding) must be appropriate to the volume and nature of the hazardous material being stored but should at a	

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					minimum be ≥110% of the volume of the stored material. • The base and bund walls must be impermeable to the material stored and of adequate capacity. • Hazardous materials storage and handling areas should not be positioned near surface (stormwater) runoff drains or surface water drainage areas as these will lead to the sea. If this is impossible, stormwater drains must have protection facilities. • The volume of hazardous materials stored onsite should be kept to the minimum practicable. • A register/inventory of chemical and hazardous materials stored/used on-site should be maintained and regularly updated. • Construction machinery, equipment, and vehicles must not be washed onsite unless this is unavoidable, and measures are in place to retain and then remove the wash liquid (e.g. in conservancy tanks). • Photographic records of hard surfaces should be maintained to provide an Environmental Control Officer) with evidence that hazardous material spills and leaks have not occurred, or if they did	

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					occur were properly contained and cleaned. • • Sufficient, marked receptacles for the disposal of hazardous waste, such as oily rags, sorbent material used to clean up spills, and so must be present onsite. • Waterside • • Construction vessels must be properly maintained and regularly checked for leaks of hazardous materials. • • Emergency equipment to contain spills on water must be easily accessible, including floating booms. • • Fuel tanks of small vessels should not be refilled onboard, but at a dedicated site on land.	
8.2 G	Marine Environment	Ecological impacts due to the spillage of construction material and demolition debris into the port	Contractor	Weekly	• During demolition alongside and over water, structurally adequate debris shields should be used where practicable to contain debris and prevent it from entering the water. • The intentional disposal if construction material and waste into the port must be strictly prohibited. • Any construction material and waste spilled onto the quay apron must not be swept into the port	• Waste Management • Disposal Records • Method statements

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					but must be recovered and disposed at an appropriate waste disposal site by a licensed contractor. • • Implement appropriate controls to minimise wind and surface runoff erosion of construction materials stored onsite, including soil and other fine-grained materials. If erosion from construction material stockpiles onsite becomes a problem, then these must be covered. • • Where practicable and possible, minimise the amount of construction materials stored onsite that can be easily mobilised or eroded by wind and rain. • • Where practicable and possible, store stockpiles of construction materials that can be easily mobilised or eroded by wind and rain as far from the water's edge as possible. • • Where practicable and possible, and without unduly delaying the project, the handling of construction materials that can be easily mobilised by wind (such as soil) should be avoided when the wind speed is excessive.	

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					• Fresh concrete and cement are highly alkaline and corrosive and can cause significant water and sediment quality impairment. The use of wet concrete and cement near, over, and in the port thus requires careful control to minimise the risk of spillage. Wherever possible, pre-cast concrete structural elements should be used. • Concrete and cement batching should ideally not occur at the construction site but concrete and cement should rather be delivered in ready-mix form. It is, however, acknowledged that some batching will probably be required at the construction site. • If concrete is poured with a concrete pump, ensure that hoses and couplings are sealed and secured. • Concrete forms or tubular piles must not be filled to overflowing. • Concrete should ideally not be poured when the weather is adverse. • For concrete placed under water, fast-setting concrete should be used to limit losses from shuttering and to minimise the	

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					period over which impacts can occur. • Concrete forms must be properly sealed to prevent the loss of concrete into the port. • Concrete mixing and pouring equipment must not be washed onsite unless this unavoidable. In these instances the wash water must be collected in a dedicated wastewater collection system and disposed of appropriately.	
8.2 H	Water Quality	Deterioration in water quality due to increased suspended sediment concentrations and turbidity caused of construction activities	Contractor	Ongoing	• During demolition works over water or near the water's edge, debris shields should ideally be used to contain debris and prevent it entering the water. • •The intentional disposal of construction material and waste into the estuary must be strictly prohibited. Any construction material spilled onto the quay apron must not be swept into the water but must be recovered and reused, or must be disposed at an appropriate waste disposal site by a licensed contractor. • During demolition works over water or near the water's edge, debris shields should ideally be used to contain debris and prevent it entering the water.	•

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					• Where practicable and possible, minimise the amount of construction materials stored onsite that can be easily mobilised or eroded by wind and rain. • Where practicable and possible, store stockpiles of construction materials that can be easily mobilised or eroded by wind and rain as far from the estuary edge as possible, and on level ground. Stockpiles of construction materials must not be stored near surface runoff (stormwater) drains or surface runoff drainage channels. • If losses from construction material stockpiles onsite become a problem, these must be covered with a tarpaulin or similar fabric. • Where practicable and possible, and without unduly delaying the project, the handling of construction materials that can be easily mobilised by wind (such as soil) should be avoided when the wind speed is excessive or during heavy rainfall. • If increases in suspended sediment concentrations are observed to be more frequent and wide ranging in spatial extent than	

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					predicted, construction methods must be reviewed to identify areas for improvement to prevent this occurrence.	
8.2 l		Deterioration in water quality due to the release of oxygen depleting substances from sediment by construction activities	TRANSNET Contractor	Weekly	• During demolition over water, construct structurally adequate debris shields to contain debris and prevent it from entering the water. • Implement appropriate controls to minimise wind and surface runoff erosion of construction materials stored onsite, especially soil and other fine-grained materials. • Where practicable and possible, minimise the amount of construction materials stored onsite that can be easily mobilised or eroded by wind and rain. • Where practicable and possible, store stockpiles of construction materials that can be easily mobilised or eroded by wind and rain as far from the water's edge as possible, and on level ground. Stockpiles of construction materials must not be stored near surface runoff (stormwater) drains or surface runoff drainage channels. • Where practicable and possible, and without unduly delaying the project, the handling of construction materials that can be easily mobilised by wind (such as soil) should be avoided when the wind speed is excessive.	•

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					• If losses from construction material stockpiles onsite become a problem, then these must be covered. • The intentional disposal of construction material and waste into the port must be strictly prohibited. • Any construction material and spilled onto the quay apron must not be swept into the port but recovered and reused, or must be disposed at an appropriate waste disposal site by a licensed contractor. • If increases in suspended sediment concentrations are observed to be more frequent and wide ranging in spatial extent than predicted, construction methods must be reviewed to identify areas for improvement to prevent this occurrence.	
8.2 J	Water Quality	Deterioration in water quality due to the release of nutrients from sediment by construction activities	Contractor	Ongoing	None required due to the very low significance rating.	• Long term Ecological monitoring Report
8.2 K	Water and Sediment Quality	Deterioration in water and sediment quality due to the mobilisation of toxic chemicals from sediment by construction activities	Contractor	Ongoing	No mitigation is required due to the very low significance rating.	• Long term Ecological monitoring Report
8.2 L	Ecological Impacts	Ecological impacts due to the deposition of sediment outside the dredging footprint	Contractor	Weekly	• Use dredging methods that limit the mobilisation and release of fine-grained sediment from dredging equipment. Mechanical dredging with a backhoe	•

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					usually releases a higher concentration of sediment into the water column than hydraulic dredging. • Dredge in winter when most fauna and flora will not be breeding, the significance being that larval and juvenile stages of marine fauna and the propagules of marine flora are more susceptible to the effects of suspended sediment than are adult stages. • Hopper overspill should be directed down rather than laterally into the water column, to minimise to the extent possible the dispersion of suspended sediment. • Dredging should be completed within the shortest timeframe possible to reduce the period over which fauna and flora might be exposed to increased suspended sediment concentrations and associated turbidity. • The dredging footprint should be restricted to the smallest area and depth possible (i.e. do not over dredge), thereby minimising the amount of sediment mobilised and released into the water column.	
8.2 M	Water Quality	Deterioration in water quality due to the release of oxygen depleting substances from sediment by dredging	Contractor	As required	• Dredging should ideally be performed in winter when ecological productivity is lowest and dependencies by other biota on biological communities in and near the dredging footprints is lowest.	• Site demarcation

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					• Dredging should be completed within the shortest timeframe possible so that recolonisation of the exposed can proceed. • The dredging footprint should be restricted to the smallest area and depth possible (i.e. do not over dredge) to minimise the area disturbed and the duration of dredging.	
8.2 N	Water Quality	Deterioration in water quality due to the release of nutrients from sediment by dredging	Contractor	Contractor	• Dredging should ideally be performed in winter when most components of biological communities will not be reproducing, the significance being the larval and juvenile stages of marine fauna and the propagules of marine flora are more susceptible to the effects of lower dissolved oxygen concentrations than the adult stages. • Dredging should be completed within the shortest timeframe possible to limit the period over which biological communities might be exposed to lowered dissolved oxygen concentrations. • The dredging footprint should be restricted to the smallest area and depth possible (i.e. do not over dredge), to minimise the amount and time over which oxygen depleting substances are mobilised and released from sediment.	•

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					• If possible, there should be no return flow from dredger hoppers or dredging barges.	
8.2 O	Water Quality	Deterioration in water quality due to the release of toxic chemicals from sediment by dredging	Contractor	Weekly	• Dredging should ideally be performed in winter when the growth of flora is limited by temperature. • The dredging footprint should be restricted to the smallest area and depth possible (i.e. do not over dredge), thereby minimising the amount of nutrients released from sediment.	
8.2 P		Ecological impacts due to the removal, injury, and disturbance of biological communities in dredging footprints	Contractor	Ongoing	• Use dredging methods that limit the loss of fine-grained sediment from dredging equipment, the significance being that many types of toxic chemicals preferentially adsorb onto fine-grained material in the sediment (e.g. mud grains, particulate organic matter) and this material has the potential to be transported by currents over the widest area and hence to transfer adsorbed contaminants beyond the dredging footprints. • Use a silt curtain to limit the dispersion of fine-grained material onto which contaminants may be adsorbed from the dredging area. • Dredging should ideally be performed in winter when most fauna and flora will not be breeding, the significance being the larval and juvenile stages of marine fauna and the propagules of marine flora	•

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					are more susceptible to the effects of toxic chemicals than the adult stages. • Dredging should be completed within the shortest timeframe possible to reduce the period over which biological communities might be exposed to toxic chemicals mobilised from sediment. • The dredging footprint should be restricted to the smallest area and depth possible (i.e. do not over dredge), thereby minimising the amount of toxic chemicals mobilised from sediment.	
8.2 Q	Water	Deterioration in water quality due to an increase in suspended sediment concentrations during dredged sediment disposal	Contractor	Ongoing	• Dredging should ideally be performed in winter when ecological productivity is lowest and dependencies by other biota on biological communities in and near the dredging footprints is lowest. • Dredging should be completed within the shortest timeframe possible so that recolonisation of the exposed can proceed. • The dredging footprint should be restricted to the smallest area and depth possible (i.e. do not over dredge) to minimise the area disturbed and the duration of dredging.	•
8.2 R		Deterioration in water quality due to the release of oxygen depleting substances from sediment during disposal			• Dredged sediment should ideally be disposed in late winter to early spring when most fauna and flora will not be breeding, the significance being that larval and juvenile stages of marine fauna and propagules of marine fauna	•

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					are more susceptible to the effects of suspended sediment than adult stages. • Dredging should be completed within the shortest timeframe possible to reduce the period over which fauna and flora might be exposed to elevated suspended sediment and turbidity due to the disposal of dredged sediment. • The dredging footprint should be restricted to the smallest area and depth possible (i.e. do not over dredge), thereby minimising the amount of sediment that needs to be disposed at the dredged spoil disposal site.	
8.2 S		Deterioration in water quality due to the release of oxygen depleting substances from sediment during disposal			• Dredging, and hence dredged sediment disposal, should ideally be performed in winter when most fauna and flora will not be breeding, the significance being the larval and juvenile stages of marine fauna and the propagules of marine flora are more susceptible to the effects of low dissolved oxygen concentrations than the adult stages	•
8.2 T		Deterioration in water quality due to the release of nutrients from sediment during disposal			• Dredging should ideally be performed in winter when the growth of flora is limited by temperature.	•
8.2 U		Ecological impacts due to the transfer of toxic chemicals in dredged			• Dredged sediment should be disposed in as thin a layer on the dredged spoil disposal site as is possible as this will facilitate the dispersion of contaminated	•

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		sediment to the dredged spoil disposal site			sediment from the spoil disposal site over as large an area possible, and in this way dilute the toxic chemical concentrations. Thin layer placement will also oxygenate sediment, facilitating the oxidation (breakdown) of toxic chemicals such as hydrogen sulphide. However, this will lead to elevated suspended sediment concentrations and turbidity over a far wider area compared to the disposal of sediment in a confined area of the dredged spoil disposal site. • Dredging, and hence the disposal of dredged sediment, should ideally be done in winter when most fauna and flora will not be breeding, the significance being that larval and juvenile stages of marine fauna and propagules of marine flora are more susceptible to the effects of toxic chemicals than adult stages.	
8.2 V		.Ecological impacts due to physical effects of sediment disposal at the dredged spoil disposal site			• Dredged sediment should be spread in as thin a layer as is practicable on the dredged spoil disposal site (i.e. thin layer placement). This will aid in the migration of benthic invertebrate fauna through the deposited sediment. • Dredged sediment should ideally be disposed in late winter to early spring when most fauna and flora will not be breeding. This will aid in the recolonisation of the site in late spring to	•

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					summer by the larvae and settling stages of benthic invertebrate fauna. • The dredging footprint should be restricted to the smallest area and depth possible (i.e. do not over dredge), in this way minimising the volume of sediment that needs to be disposed at the dredged spoil disposal site.	
8.2 V		Impacts associated with the disposal of sediment leading to an elevated seabed at the dredged spoil disposal site	Contractor	Ongoing	• The dredged sediment should be spread in as thin a layer as is practicable on the spoil disposal site (i.e. thin layer placement), to avoid impacts that might arise due to a significantly elevated seabed. • Large vessels should not use the area near the dredged spoil disposal site for anchoring.	•
8.2 W		Ecological impacts due to the temporary loss of sheet pile wall biological communities	Contractor		None required due to very low significance rating. No mitigation is in fact possible.	•
8.2 X		Ecological impacts due to underwater noise	Contractor	Weekly	• In so far as conditions permit, vibratory piling should be used in preference to percussive piling. • Piling should ideally be limited to a time outside the breeding period for fauna likely to be most adversely impacted by underwater noise, since noise exposure might force fauna to forage or breed in sub-optimal areas or to avoid the area entirely. The ideal period is autumn/winter. It is, however,	•

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					acknowledged that this might not be practical for the project and that the piling period may extend over several months. • A pre-piling survey for the presence of marine mammals (in this case likely to be restricted to dolphins) of the area near the piling activity should be performed for 15 minutes. If dolphins should be observed, piling must not commence until at least 15 minutes after dolphins were last observed. It is especially important to ensure that dolphins left the area in the direction of the estuary mouth, to avoid them being trapped in the upper part of the estuary by an underwater noise barrier. • A 'soft-start'/'ramp-up' regime should be followed at the commencement of piling on each day to allow those fauna that can an opportunity to move away from the area before the sound pressure increases to a level that they might be injured. This procedure should also be followed if there is a temporary halt in piling on any given day. • If dolphins are observed near the piling operation when in full power, there is no need to cease piling as the dolphins can be assumed to have entered the area 'voluntarily' and to not be overly disturbed by the underwater noise.	

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					• Driving tubular steel piles into the substrate one at a time will reduce the magnitude of underwater noise exposure. However, this will prolong the period over which high intensity underwater noise is generated by piling. No recommendation is thus made on whether piles should be driven individually or concurrently, although it is probable this will ne individually. • If dead fish are observed near the piling operation the ramp up regime should be lengthened.	
8.2 Y	Noise Impact	Ecological impacts due to above water noise disturbance	Contractor	Daily	• In so far as conditions allow, vibratory piling must be used in preference to percussive piling. • Piling should ideally be limited to a time outside the breeding period for fauna likely to be most adversely impacted by underwater noise, since noise exposure might force the fauna to forage or breed in sub-optimal areas or to avoid the area entirely. The ideal period is autumn/winter. It is, however, acknowledged that this might not be practical for the project and that the piling period will extend over many months. • A 'soft-start'/'ramp-up' regime should be followed at the commencement of piling on each day to allow any dolphins that might not have been observed and	•

Item No.	Issue	POTENTIAL IMPACT	Responsible Party	Frequency	Mitigation Measure	Mechanism of Monitoring/Record of compliance
					fish to move away from the area before the sound pressure increases. This procedure should also be followed if there is a temporary halt in piling on any given day. • Driving tubular steel piles into the substrate one at a time will reduce the magnitude of underwater noise exposure. However, this will prolong the period over which high intensity underwater noise is generated by piling. No recommendation is thus made on whether piles should be driven individually or concurrently, although it is probable this will be individually.	
8.2 Z	Wall Geometry	Impact of altered quay wall geometry on hydrodynamics	Transnet Contractor	As required	There is nothing that can be done to directly mitigate this impact other than not proceeding with the project (the 'Do Nothing' option).	•
8.2 ZA	Habitat Loss	Ecological impact due to permanent habitat loss	Transnet Contractor	As required	There is nothing that can be done to directly mitigate this impact other than not proceeding with the project (the 'Do Nothing' option).	•
8.2 ZB	Habitat Modification	Ecological impact due to habitat modification by the deck-on-pile structure	Transnet Contractor	Weekly	• The number of piles used should be limited to the smallest number possible, to decrease the shade cast by pilings. • If possible, inserts should be incorporated into the deck of the deck-on-pile structure to transmit light to the water beneath.	•

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8.3 ZC		The damage and disruption of paleontological resources as preserved in its host rocks within the development footprints.	Contractor	\Daily Weekly	• The initial mitigation involves the detailed assessment of geological detrital for the paleontological footprints. •The unearthing of the geological portion of the development area must be done with precautions and due observation, considering the possibility of discovering new paleontological data. • Though the present deduction suggests the mutilation of the development footprints, should a fossil discovery be made, the SAHRA must be reached to oversee the extraction and safeguarding of the resource for sampling and preservation purposes. A discovery of any palaeontological resource must be protected so that a professional paleontologist will make appropriate mitigation. If fossil remains are discovered during any phase of construction, either on the surface or uncovered by excavations the ECO/site manager in charge of these developments must be notified immediately. These discoveries ought to be protected (if possible, in situ) and the ECO must report to SAHRA (Contact details: ECPHRA, Corner Scholl and Amalinda Drive, East London Tel: 0437450888 /0434921942; Fax: +27 (0)43 7450889. Web: www.ecprha.org.za) so that correct	•

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					mitigation (recording and collection) can be carry out by a palaeontologist. • A licensed or professional paleontologist must extract and recover the fossil.	
8.3 ZD	Socio-economic	Employment Creation	Transnet Contractor	Monthly	No mitigation required, however, use of local labour and businesses wherever possible is encouraged. A grievance mechanism must be established so that users of the Old Tug Jetty may have an opportunity to submit concerns throughout the construction period.	• Labour report of the Community Liaison Officer
8.3 ZE	Socio-economic	Skills Transfer	Transnet Contractor	Monthly	No mitigation required, however, use of local labour and businesses wherever possible is encouraged.	• Labour report of the Community Liaison Officer
8.3 ZF	Air Quality	Dust generation	Contractor	Daily	• Cleared surfaces must be dampened whenever possible, especially during dry and windy conditions, to avoid excessive dust generation. • Any soil excavated, and not utilised for rehabilitation, must be removed from site or covered and no large mounds of soil may be left behind after construction. Record daily dust observations, and where excessive dust is found, detail measures implemented to control dust • Dust suppression using water trucks or a hosepipe	Visual dust monitoring sheet • Photographic records
8.3 ZG	Visual and Land use	Landscape and disturbances	TRANSNET	Ongoing	• The construction footprint must be surveyed and demarcated prior to	• Demarcation of site

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			Contractor		construction commencing to ensure that there is no unnecessary loss of cultivated land outside the approved road stabilization footprint. • No construction related activities should take place outside of the development footprint. •Minimize disturbance of new areas. • The site camp must be decommissioned, and the area rehabilitated once construction has been completed. • All waste, materials and equipment must be removed from site. • The project area is to be kept tidy and free of litter.	• Visual aesthetic of the site is maintained well through good housekeeping
8.3 ZH	Climate Change	Water Availability Flooding	TRANSNET Contractor	Ongoing	• Conserve water, reuse water from excavated trenches. • Contamination of water resources to be avoided Consider the anticipated sea level rise over the next 100 years the engineering design team to conduct analysis on the sufficiency of the cope levels of the proposed structure.	• Water consumption monitoring • Engineering studies on Port Cope Levels
8.3 ZI	Traffic	Delays in traffic flow during construction	Contractor	Daily	• A Traffic Management Plan must be compiled by the contractor prior to the commencement of the construction phase detailing appropriate mitigation measures. • On-site vehicles must be limited to approved access routes and areas on	• Traffic Management Plan

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					the site so as to minimize excessive environmental disturbance to the soil and vegetation on site, and to minimize disruption of traffic;	
		Improved Old Tug Jetty sheet pile wall stability and safety	TRANSNET	Ongoing	• A maintenance and management plan must be compiled for the newly constructed structures	• No further deterioration detected
8.2 ZJ	Health and Safety	Injuries and fatalities during construction	Contractor	Ongoing	• The contractor must ensure that workers adhere to all safety regulations as per Occupational Health and Safety Act. • Appropriate PPE must be worn by workers at all times. • Regular training/talks must be given to all workers on site regarding safe working procedures. • Appropriate warning signs must be in place to notify the public regarding construction activities. • The construction site and camp must have access control and be demarcated, where possible. • Hazardous Chemical Substances Regulations promulgated in terms of the Occupational Health and Safety Act 85 of 1993 and the SABS Code of Practise must be adhered to. This applies to solvents and other chemicals possibly used during the construction process.	• Safety induction and training • PPE available • Suitable strorage areas

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					• The individual(s) that will be handling hazardous materials must be trained to do so. • All hazardous chemicals must be stored properly in a secure, bunded and contained area.	
8.3 ZK		Fires			• The contractor must ensure that operational firefighting equipment is present on site at all times as per Occupational Health and Safety Act. • All construction foremen must be trained in fire hazard control and firefighting techniques. • All flammable substances must be stored in dry areas which do not pose an ignition risk to the said substances. • No open fires will be allowed on site unless in a demarcated area identified by the ECO. No smoking near flammable substances. • All cooking shall be done in demarcated areas considered safe in terms of runaway or uncontrolled fires. • The level of firefighting equipment must be assessed and evaluated thorough a typical risk assessment process. • Fires shall only be allowed in facilities or equipment specially constructed for this purpose. The need for a firebreak shall be determined in consultation with the Engineer and the relevant authorities, and if required a firebreak	• Serviced firefighting equipment • Risk Assessments • Firebreak cleared

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					shall be cleared and maintained around the perimeter of the camp and office sites.	

9. INSPECTION AND REPORTING

9.1. Documentation

The following documentation must be kept on the project site for the full duration of the contract:

- Environmental Management Plan;
- Environmental Policy of the Contractor;
- Environmental Method Statements compiled by the Contractor;
- Daily, weekly and monthly environmental monitoring reports;
- Minutes and record of attendance of all environmental meetings;
- Environmental Incident Book Register & Reports;
- Environmental Non-conformance Register & Environmental Non-conformance Reports;
- Environmental Complaints Register;
- Communications Register;
- Register of audits;
- Contractor registers (awareness training, waste disposal, etc.);
- Waste manifests; and
- Relevant legislation.

9.2. Responsibility Matrix and Organogram

The Contractor must develop a Responsibility Matrix and Organogram which must be approved by the Transnet Project Manager and displayed in an appropriate location. This will identify responsible parties, their contact details, and highlight their roles and responsibilities. This document must be updated on a regular basis to ensure that information is correct.

9.3. Environmental Inspections and Audits

Audits will be conducted by the Transnet Project Environmental Officer to monitor compliance with the requirements of the EMP. Photographic records of the site will support the visual assessment. The Transnet Project Environmental Officer will submit all audits to the Transnet Project Manager. These findings will be kept on file on the project site.

External auditing may take place at unspecified times by the DFFE and/or other relevant authorities. The DFFE may, from time to time, also ask to view copies of audit reports drafted by the Transnet Project Environmental Officer. Environmental inspections and audits are conducted using five basic techniques:

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

This document sets out the areas and aspects of the construction site that will be inspected or audited, the frequency of such audits, the auditor and auditee.
It should be noted that these lists are not exhaustive and that each site will have specific issues that will need to be audited. For each construction project, the auditor and auditee are as follows:

Place	Inspector/Auditor	Auditee	Inspection/audit frequency
Work places	Contractor's Environmental Officer	Contractor's team	Daily/Weekly Inspection
Construction site	Transnet Project Environmental Officer / Independent Environmental Control Officer	Contractor's Environmental Officer	Monthly Audit
Construction site (entire area)	Environmental Specialist: Assurance	Entire Project	Quarterly & As required

9.4. Work Place Inspection

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

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

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

- Litter
- Separation of solid waste as per system
- Hydrocarbon spills
- Effectiveness of dust control measures
- Illegal washing out of containers in drains
- Wash bay drainage systems are working
- Correct usage of drip trays

- Effectiveness of oil separators
- Water use and wastage
- Pollution of rivers and sea
- Provision and use of toilet facilities
- Any other illegal activities

By document check:

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

The following records must also be kept up to date (information must include that of sub-contractors where relevant):

- Fuel consumption for entire contract measured in litres (including plant, generators, other equipment, vehicles etc.)
- Electricity consumption for entire contract measured in Watt hours
- Quantities of general waste submitted for recycling measured in kilograms
- Quantities of general waste disposed of to landfill measured in kilograms
- Quantities of hazardous waste submitted for recycling measured in kilograms
- Quantities of hazardous waste disposed of to landfill measured in kilograms
- Water consumption, including water used for construction and human consumption measured in litres

9.5. Construction Site Audit

The Transnet Project Environmental Officer and/or ECO will be required to conduct monthly inspections of the entire construction site, which may involve more than one Contractor and may include, but not be limited to the following:

- Entire site
- Fencing
- Environmentally sensitive areas
- Contractor's camp, recreational and canteen facilities
- Material lay down areas
- Scrap yard
- Workshops
- Oil traps
- Wash bays
- Sewage plant
- Quarries and borrow pits used for fill and construction material
- Spoil dumping areas

- Solid waste disposal areas
- Liquid waste disposal areas
- Bioremediation site
- Area for the temporary storage of hazardous waste
- Fuel depot and hydrocarbon storage areas
- Construction work area
- Concrete batching plant
- Spray booths
- Haul roads
- No-go areas
- Storm water drains
- And any other construction areas not listed

At each of these sites, the Transnet Project Environmental Officer will be required to check for the following, where relevant:

By observation:

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

By document check:

- All receipts for the collection of old oil, general recycled waste and hazardous waste
- Correct placement of environmental signage and posters
- Document board listing emergency numbers, hazmat info sheets, etc.
- Complete and accurate record of Contractor's Environmental File

By measurement:

- Amount of water used by each Contractor (where practical)

- Amount of topsoil removed and stockpiled
- Amount of land stabilisation completed
- Area re-vegetated
- • Amount of waste recycled, sent to scrap yard or disposed of in a landfill site
- • Amount of material treated through bioremediation

By monitoring:

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

A site-specific inspection checklist will be provided to the Transnet Project Environmental Officer prior to site establishment.

9.6. Construction Site and Documentation Compliance Audit

The Transnet Environmental Specialist: Assurance and/or the ECO will conduct quarterly audits of the entire construction site and documentation system, which may include, but not be limited to the following:

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

By observation:

- Litter
- Liquid and Solid waste storage facilities
- Hydrocarbon spills
- Use of bunding, hard standing and other protection measures
- Illegal dumping
- Effectiveness of dust control measures
- Illegal washing out of containers in drains
- Wash bay drainage systems are working
- Correct usage of drip trays
- Effectiveness of oil separators
- Illegal use of tracks and off-road driving in no-go areas
- Correct procedures are followed for topsoil removal and stockpiling
- Effectiveness of erosion protection measures

- Excess noise and vibration
- Water use and wastage
- Pollution of rivers and sea
- Provision and use of toilet facilities
- Any other illegal activities

By document check:

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

By verification (if necessary):

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

By interview:

- Transnet Project Manager
- Transnet Project Environmental Officer
- Contractor's Environmental Officer
- Contractor's staff at random

A specific site audit protocol will be formulated prior to the first audit and sent to the Transnet PEM two weeks in advance of the quarterly audit.

9.7. Weekly Environmental Monitoring Report

The Contractor's Environmental Officer will be required to provide the Transnet Project Manager with a weekly environmental monitoring report covering the events of the past week. This will highlight key performance areas and provide feedback on corrective and preventive actions taken. The Contractor's Environmental Officer will have the weekly reports signed off by the Contractor's Manager prior to submission to the Transnet Project Manager.

9.8. Environmental Site Meetings

Environmental Site Meetings shall take place as per the schedule contained within the Tender Data. These meetings shall be chaired by a Senior Site Representative with the Transnet Project Manager, Project Environmetal Specialist, Independent ECO, Contractor(s) and the Contractor's Environmental Officer('s) in attendance.

9.9. Non-compliance

The contractors must act immediately when notice of non-compliance is received and take corrective action. Complaints received regarding activities on the construction site pertaining to the environment must be recorded in a dedicated register and the response(s) noted with the date and action taken. The ECO should be made aware of any complaints.

Any non-compliance with the agreed procedures of the EMPr is a transgression of the various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause must be reported to the competent authority for them to deal with the transgression, as it deems fit.

The Contractor is deemed not to have complied with the EMPr if, inter alia:

- There is evidence of contravention of the EMPr specifications within the boundaries of the construction site and site extensions;
- There is contravention of the EMPr specifications which relate to activities outside the boundaries of the construction site;
- Environmental damage ensues due to negligence;
- Construction activities take place outside the defined boundaries of the site; and/or
- The Contractor fails to comply with corrective or other instructions issued within a specific time period.

It is recommended that the Contractors institute penalties for the following less serious violations and any others determined during the course of work, as detailed below:

- Littering on site.
- Lighting of illegal fires on site.
- Persistent or unrepaired fuel and oil leaks.
- Any persons, vehicles or equipment related to the Contractor's operations found within the designated "no-go" areas.
- Excess dust or excess noise emanating from site.
- Possession or use of intoxicating substances on site.
- Any vehicles being driven in excess of designated speed limits.

- Removal and/or damage to fauna, flora, cultural or heritage objects on site.
- Urination and defecation anywhere except at designated facilities.

9.10. Non-Conformances

A non-conformance may be issued to the Contractor by the Transnet Project Manager/Environmental Officer where:

- The incident response procedure described above (including administrative requirements) were not successfully implemented; or
- There are repeated incidents because of inadequate environmental practices on site;
- Documentation required to comply with the EMP is not prepared or maintained adequately on site; or
- Any non-compliances with the requirements of the Environmental Authorisations, the EMP and Environmental Specifications are identified

9.11. Non-conformance Report

The following information should be recorded in the NCR:

- details of non-conformance;
- any plant or equipment involved;
- any chemicals or hazardous substances involved;
- work procedures not followed;
- any other physical aspects; and
- nature of the risk.

Actions agreed to by all parties following consultation should adequately address the identified non-conformance. This may take the form of specific control measures and should take the hierarchy of controls into account. This must accompany the NCR for filing purposes.

All parties must agree on the timeframe by which the Contractor should have implemented the actions. The Transnet Project Manager should verify that the agreed actions have taken place on or soon after the agreed completion date. Where the actions are complete, the Transnet Project Manager and Contractor should sign the Close-Out portion of the Non-Conformance Form and file it with the contract documentation. Manager and Contractor should sign the Close-Out portion of the Non-Conformance Form and file it with the contract documentation.

In the event of an environmental incident, the Contractor will follow the following procedure:

- Step 1: Immediately take all reasonable measures to contain and minimise the effects of the incident, including its effects on the environment and any risks posed by the incident to the health, safety and property of persons;
- Step 2: Notify the Transnet Project Environmental Officer and ECO in writing including the following information: the nature of the incident and initial classification; substances involved with

quantities; initial measures taken to minimise impacts; causes of the incident; measures taken and those proposed to avoid the reoccurrence of the incident;

- Step 3: Include the incident on the Transnet Environmental Incident Register Step 4: Undertake clean-up procedures;
- Step 5: Remedy the effects of the incident; and
- Step 6: Assess the immediate and long-term effects of the incident on the environment and on public health;

In the event of any Level 1 or 2 environmental incidents, the Contractor's Environmental Officer must complete a Transnet Environmental Incident Report

In the event of any Level 1 or 2 environmental incidents, the Transnet Environmental Officer will:

- Ensure that an Incident Report has been compiled and that it contains the necessary information;
- Ensure that Contractor has complied with Transnet Occurrence Reporting and Investigation Procedure; and
- Report, record, investigate and analyse the incident and communicate the required action plans to be implemented to the Transnet Construction Manager as specified in the above-mentioned procedure.

An environmental incident is classified under four levels: 1, 2, 3 and 4. They are defined as follows:

9.11.1. Level 1 Environmental Incident

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

- A significant impact on the physical or biological environment (air, ground, water and habitat) with extensive or long term impairment of ecosystem function or surface and ground water resources.
- An inconvenience/ disturbance/disruption/annoyance (including odour, dust, noise, traffic problem, loss of water supply) of a long duration or with a long term impact on interested and affected parties. A release of material (gas, liquid, solid) or energy that will cause chronic illness, permanent lost time injury, fatality or extensive property damage experienced by interested and affected parties.
- Irreparable damage to highly valued structures and sacred locations.
- Public or national / international media outcry
- Instances where inspections undertaken by or for the regulator to check legal compliance, were found to be outside the permitted limits and have resulted in prosecution.
- Any incident with NEMA section 30(1) – and/or NWA section 20(1) reporting requirements (In the even where all administrative requirements have been complied with and the incident has been closed out by the authorities, it may be re-classified as a Level 2 environmental incident)

Where the environmental impact of a Level 2 environmental incident is still present 120 days after occurrence, the incident will be reclassified as a Level 1 incident.

NOTE: A Level 1 environmental incident usually should be reported to the authorities, usually result in a significant pollution and may entail risk of public danger. Level 1 environmental incidents usually cause

an irreversible impact even with the involvement of long-term external intervention i.e. expertise, best available technology, remedial actions, excessive financial cost, etc.

9.11.2. Level 2 Environmental incident

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

- A moderate impact on the physical or biological environment (air, ground, water or habitat) with limited impairment of ecosystem function and/or surface and ground water resources.
- An inconvenience disturbance/ disruption/annoyance (including odour, dust, noise, traffic problems, loss of water supply) of moderate or with medium effect on interested and affected parties.
- A release of material (gas, liquid, solid) or energy that causes severe but reversible illness, non-lost time injury or moderate property damage experienced by interested and affected parties.
- Damage to rare structures of cultural significance or significant infringement of cultural values / sacred locations.
- Attention from local media or widespread complaints
- Instances where inspections undertaken by or for the regulator to check legal compliance have been outside the permitted limits and an official pre-directive or directive was issued.
- Inability of Contractors to close out corrective actions in an NCR without proper reason

Where the environmental impact of a Level 3 environmental incident is still present 3 days after occurrence, the incident will be reclassified as a Level 2 incident.
NOTE: A Level 2 environmental incident may be reported to the authorities, can result in significant pollution or may entail risk of public danger. The impact of Level 2 environmental incidents should be reversible within a short to medium term with or without intervention.

9.11.3. Level 3 Environmental incident

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

- A minor impact on the physical or biological environment (air, ground, water or habitat), with no significant or long-term impairment to the ecosystem function or surface/ground water resources.
- An inconvenience / disturbance / disruption / annoyance (including odour, dust, noise, traffic problems, loss of water supply) of short duration and with no long-term effect on the employees and the community.
- A release of material (gas, liquid, solid) or energy that has the potential to cause illness, or that causes short term discomfort or reversible health effect to interested and affected parties.
- Isolated complaints by interested and affected parties.
- Instances where inspections undertaken taken by or for the regulator to check for legal compliance, have been outside the permitted limits and a non-compliance notice was issued.
- Blatant negligence of EMPr leading to the issuing of an NCR

NOTE: A Level 3 environmental incident is not reportable to authorities, should not result in pollution and may not have a risk of public danger. The impact of Level 3 environmental incidents should be insignificant immediately after occurrence and/or once-off intervention on the day of occurrence. Standard Environmental Management Plan Minor Works Port of Port Elizabeth

9.11.4. Level 4 Environmental incident

A minor incident with lesser significance that did not necessarily result in damage or injury but that had the potential to cause damage to the environment, including:

- Could result in service disruption with a lesser significance
- Did not necessarily result in damage
- Had the potential, under different circumstances, to cause major damage to the environment or:
- Instances where inspections undertaken internally by Transnet to check for conformance with the Transnet Environmental Governance Framework have been outside the required limits (e.g. an environmental compliance score of less than 80%).

9.12. Environmental Emergency Response

The Contractor's environmental emergency procedures must ensure that there will be an appropriate response to unexpected or accidental actions or incidents that could cause environmental impacts. Such incidents may include:

- accidental discharges to water (i.e. into the sea) and land;
- accidental spillage of hazardous substances (typically oil, petrol, and diesel);
- accidental toxic emissions into the air; and
- specific environmental and ecosystem effects from accidental releases or incidents.

The Environmental Emergency Response Plan is separate to the Health and Safety Plan as it is aimed at responding to environmental incidents and must ensure and include the following:

- all employees shall be adequately trained in terms of incidents and emergency situations;
- details of the organisation (manpower) and responsibilities, accountability and liability of personnel;
- a list of key personnel and contact numbers;
- details of emergency services (e.g. the fire department, spill clean-up services) shall be listed;
- internal and external communication plans, including prescribed reporting procedures;
- actions to be taken in the event of different types of emergencies;
- incident recording, progress reporting and remediation measures to be implemented; and
- information on hazardous materials, including the potential impact associated with each, and measures to be taken in the event of accidental release.

The Contractor(s) will comply with the environmental emergency preparedness and incident and accident-reporting requirements, as required by the Occupational Health and Safety Act (Act No. 85 of

1993), the National Environmental Management Act (Act No. 107 of 1998), the National Water Act (Act No. 36 of 1998), and/or any other relevant legislation listed in Section 1.

9.13. Incident Management

Using the Impact/Aspect Risk register, the Contractor must identify the types of environmental incidents that are likely to occur on site and ensure measures are put in place to prevent or mitigate the effects of such incidents. The Contractor is required to put in place an effective management system that will prevent or mitigate the occurrence of an incident. The method statement for this must be submitted to the Transnet Project Manager for approval prior to the commencement of works. This method statement must be reviewed and up dated on a six monthly basis.

All the Environmental, Health and Safety incidents must be reported to the Contractor. The Contractor shall immediately report the incident to the Transnet Project Manager and put into place management mechanisms to deal with the incident as quickly as possible. A formal report must be submitted within seven days to the Transnet Project Manager, including all remediation measures undertaken to repair any damage caused and to prevent the incident from re occurring.

Once the incident has been stabilised and initial notifications have been issued to the relevant parties, a full incident investigation is required complete with detailed corrective and preventive measures. The Contractor is required to provide an incident report to the Transnet Project Manager, which, as a minimum, must include the following:

- Nature of incident.
- Damages, injuries or fatalities sustained and the parties involved.
- Any risks such incident poses.
- Toxicity of the substances involved.
- Steps taken to avoid or minimise the effects of the incident and any future incidents.
- Clean-up procedures, remedial actions and assessment of immediate and long term effects.

9.14. Environmental Method Statements

The Contractor must submit environmental method statement to the Transnet Manager for approval prior to the commencement of maintenance related activities.

A method statement is a document detailing how a particular process will be carried out. It should detail the possible dangers/risks associated with the particular part of the project and the methods of control to be established and to show how the work will be managed in a safe and environmentally responsible manner. The method statement shall also include the following information (where applicable):

- the type of maintenance activity;
- timing and location of the activity;
- maintenance procedures;
- materials and equipment to be used;
- transportation of the equipment to and from site;
- how the equipment/material will be moved while on site;
- location and extent of Contractors site office and storage areas;
- identification of impacts that might result from the maintenance activity;
- population impacts;
- community/institutional arrangements;

- conflicts between local residents and newcomers;
- individual and family level impacts;
- community infrastructure needs;
- intrusion impacts;
- methodology and/or specifications for impact prevention or containment and for environmental monitoring;
- emergency/disaster incident and reaction procedures (required to be demonstrated); and
- rehabilitation procedures and continued maintenance of the impacted environment.

The Contractor will be accountable for all actions taken in non-compliance of the approved Method Statements. The Contractor shall keep all the method statements and subsequent revisions on file, copies of which must be distributed to all relevant personnel for implementation.
The Contractor will be required to submit method statements for approval by the Transnet Project Manager prior to the start of maintenance activities. Method statements that are required during maintenance must be submitted to the Transnet Project Manager for approval at least 14 days prior to the proposed commencement of the activity. Emergency maintenance activity method statements may also be required. The activities requiring method statements cannot commence if they have not been approved by the Transnet Project Manager.

9.15. Communications Register

All complaints or communications that are received from port users and tenants or any other stakeholder must be recorded in a Communications Register. These complaints and communications will be brought to the attention of the Transnet Project Manager, whereupon it will be investigated and a response to the Complainant will be given within 10 days / within a practically achievable timeframe in line with the merits of each case received. The Communications Register shall include the following information:

- Record the time and date of the complaint/communication;
- A detailed description of the complaint/communication;
- Action and resources used to correct the complaint;
- Photographic evidence of the complaint (where possible);
- A written response to the Complainant indicating rectification of the complaint; and
- Information regarding the relevant authority that was contacted or notified in writing (person, time and date).

The relevant authorities include:

- Department of Water and Sanitation (e.g. for any incidents involving the contamination of water resources);
- Department of Environmental Affairs (competent authority for government departments);
- Department of Environmental Affairs and Development Planning (DEA&DP) (e.g. for any significant incident of pollution of the soil and air);
- Department of Agriculture, Forestry and Fisheries (e.g. uses of appropriate herbicides for eradication of alien invasive species);
- Department of Health (e.g. for incidents such as contamination of water resources, accidental spill of hazardous substances);
- Department of Transport and Public Works (e.g. for the diversion of traffic due to construction activities);
- Department of Labour (e.g. for labour disputes);
- Eastern Cape: Department of Agriculture;
- Eastern Cape Heritage Resource Agency
- Nelson Mandela Bay Metropolitan Municipality: Fire Emergency Services

- Nelson Mandela Bay Metropolitan Municipality: Health Department (e.g. for control of nuisances);
- Nelson Mandela Bay Metropolitan Municipality: Electricity Department (e.g. impacts upon electricity provision);
- Nelson Mandela Bay Metropolitan Municipality : Environmental Resources Management (e.g. issues pertaining to environmental management);
- Nelson Mandela Bay Metropolitan Municipality : Catchment, Stormwater and River Management (e.g. issues pertaining to drainage and stormwater management);
- Nelson Mandela Bay Metropolitan Municipality : Transport (e.g. road closures and diversions);
- Nelson Mandela Bay Metropolitan Municipality : Solid Waste Management (e.g. waste derived from demolition activities); and
- Nelson Mandela Bay Metropolitan Municipality: Water and Sanitation (e.g. impacts pertaining to reticulation services).

9.16. Photographic Record

The Construction Manager and Contractor's Environmental Officer will be required to compile a photographic record of all activities on site prior to maintenance related activities starting, during the maintenance process and on completion of maintenance related works. This will include photographs for:

- Monthly environmental audit reports;
- Weekly environmental monitoring reports;
- Corrective action;
- Progress of environmental works; and
- Non-conformance reports.

9.17. Waste Manifests

The Contractor shall ensure that all solid (including any hazardous) waste removed from site is disposed of at a registered landfill site or nearby waste transfer station with capacity to accept the project generated waste. The waste manifest shall be kept on record for auditing purposes. The Contractor shall ensure the waste manifests contain all the legally required information and the records are kept in line with the time frames prescribed in the NEM: Waste Act.

9.18. Good Housekeeping

The Contractor is to practice good housekeeping throughout the maintenance works. This should eliminate disputes about responsibility and facilitate efficient and timeous running of the project. Over and above practicing accepted construction methods in accordance with SANS 10120, this should include measures to preserve the environment inside the work area. Records of such actions taken to ensure the maintenance and management of housekeeping must be recorded.

The Contractor is to implement environmental management in a reasonable manner and should such management not prove effective, shall implement measures to the satisfaction of the Transnet Project Manager.
Appropriate measures shall include:

- Appointment of necessary resources to monitor and manage environmental requirements.
- Implement aspect-specific method statements to deal with emergency situations.
- Provision of adequate emergency response equipment to mitigate and manage an incident or emergency.
- Provision of specific training related to implementation of environmental management requirements.

9.19. Recording Management

The Contractor shall maintain detailed records of parameters monitored. These detailed records shall demonstrate the effectiveness of the management actions implemented to mitigate potential environmental impacts. The Contractor shall submit a monthly database/report of management works implemented to the Transnet Project Manager, as part of the Contractor's monthly report.

9.20. Monitoring

The Contractor shall submit an Environmental Monitoring Method Statement which details the scope, nature, process, schedule and templates for environmental monitoring. The monitoring results shall be used to determine the effectiveness of the management programme. All complaints, compliments or other comments relating to environmental management parameters are to be recorded by the Contractor and reported to the Transnet Project Environmental Officer.
Monitoring results and the associated required management and mitigation actions for the coming monitoring period are to be presented in the monitoring section of the Contractors Monthly Report. The daily and weekly reports (as required) are to detail observations and information relating to requested management actions and their effectiveness. The Contractor shall monitor and maintain inter alia the following on an on-going basis:

- Fire management requirements associated with maintenance related activities
- Stormwater systems
- Soil and backfill volumes
- Access road condition
- Dust
- Noise
- Water quality and quantity
- Spoil management

Site clearance monitoring results and the associated required management and mitigation actions for the coming monitoring period are to be presented in the monitoring section of the Contractor's Monthly Report.
The weekly report and daily reports are to detail observations and information relating to requested management actions and their effectiveness.

The following auditing and reporting shall be required throughout the construction phase until construction is complete:

- Daily Environmental Diary: These reports must be prepared by the contractors' EO and must aim to monitor and report on day to day activities so as to ensure compliance with, the relevant authorisations, licences and permits, the approved EMPr, and environmental method statements;
- Monthly Compliance Reports (EO): These reports must be prepared by the contractors' EO and must aim to provide a concise monthly performance report, including copies of relevant documents (e.g. waste manifests, incident registers, consultation registers, etc);
- Monthly Audit Reports: The Transnet Environmental Officer and/or ECO must compile monthly compliance reports (audits) which are to be submitted to the Applicant for review and correction of non-compliance issues. It is the responsibility of the independent ECO to report any non-compliance, which is not correctly rectified. Depending on the outcome of the permitting processes it may be a requirement to submit these to the relevant authorities.
- Quarterly Audit Report: The Transnet Environmental Specialist and/or ECO must compile quarterly audit reports which are to be submitted to the Applicant for review and correction of non-compliance issues. It is the responsibility of the independent ECO to report any non-compliance, which is not correctly rectified. Depending on the outcome of the permitting processes it may be a requirement to submit these to the relevant authorities.

9.21. Final Environmental Compliance Report

A Final Environmental Compliance Report will be compiled by the Transnet Environmental Specialist and ECO for submission to Transnet and DFFE at the end of maintenance works. The report will include details of:

- the completion of all environmental conditions and mitigation measures listed in the EMP;
- all environmental incidents and completed corrective actions;
- the findings of the Environmental Audits;
- conclusions as to whether environmental constraints, guidelines, norms and stipulations have been met and, if not, reasons why they have not been met;
- an indication of the outcomes of the environmental monitoring conducted;
- all Monthly Environmental Monitoring Reports (as an attachment);
- a copy of all Method Statements (as an attachment);
- a copy of the Environmental Incident Book (as an attachment); and
- a copy of the Communications Register.

9.22. Penalties

Where environmental damage is caused or a pollution incident, and/or failure to comply with any of the environmental specifications contained in the EMPr, TRANSNET and/or the Contractor will be liable. The following violations, and any others determined during the course of work, should be penalised:

- Hazardous chemical/oil spill and/or dumping in non-approved sites.
- Damage to sensitive environments.
- Damage to cultural and historical sites.
- Unauthorised removal/damage to indigenous trees and other vegetation, particularly in identified sensitive areas.
- Uncontrolled/unmanaged erosion.
- Unauthorised blasting activities (if applicable).
- Pollution of water sources.
- Unnecessary removal or damage to trees.

The following steps will be followed by the ECO, on behalf of TRANSNET, when observing a transgression:

1. **Transgression observed:** Give a warning to the Contractor, with time to remedy the situation. Report transgression and agreed remedial action to TRANSNET.

2. **Transgression not remedied**: Report the Contractor directly to TRANSNET and issue a financial penalty to the Contractor with an agreed time period to remedy the situation with the assistance of TRANSNET (if necessary).

3. **Failure to remediate:** Depending on the severity and impact significance of the transgression, which must be assessed and discussed with TRANSNET prior to reporting to the competent authority, the ECO may report directly to DFFE (Compliance) recommending that for:

• **HIGH impact:** DFFE to issue a notice to cease construction;

• **MEDIUM impact**: DFFE to issue a notice instructing TRANSNET to implement recommended remedial action; and/or

• **LOW impact**: ECO to notify, but up to discretion of DFFE to apply sanction.

The financial penalties shall be determined by the project engineer in consultation with the ECO. In all cases, however, non-compliance must be reported to DFFE in the monthly audit reports. However, the ECO will also report on corrective actions proposed and implemented.

10. CONCLUSIONS

All foreseeable actions and potential mitigations and/or management actions are contained in this document; the EMPr should be seen as a dynamic management document. The EMPr thus sets out the environmental and social standards, which would be required to minimise the negative impacts and maximise the positive benefits of the construction activities. The EMPr could thus change daily, and if managed correctly lead to a successful construction and operation phases.

The EMPr will be reviewed by the ECO on an on-going basis. Based on observations during site inspections and issues raised at site meetings, the ECO will determine whether any procedures require modification to improve the efficiency and applicability of the EMPr on site. Any such changes or updates will be registered in the ECO's record, as well as being included as an annexure to this document. Annexures of this nature must be distributed to all relevant parties.

All attempts should be made to have this EMPr available, as part of any tender documentation, so that the Contractors are made aware of the potential cost and timing implications needed to fulfil the implementation of the EMPr, thus adequately costing for these.

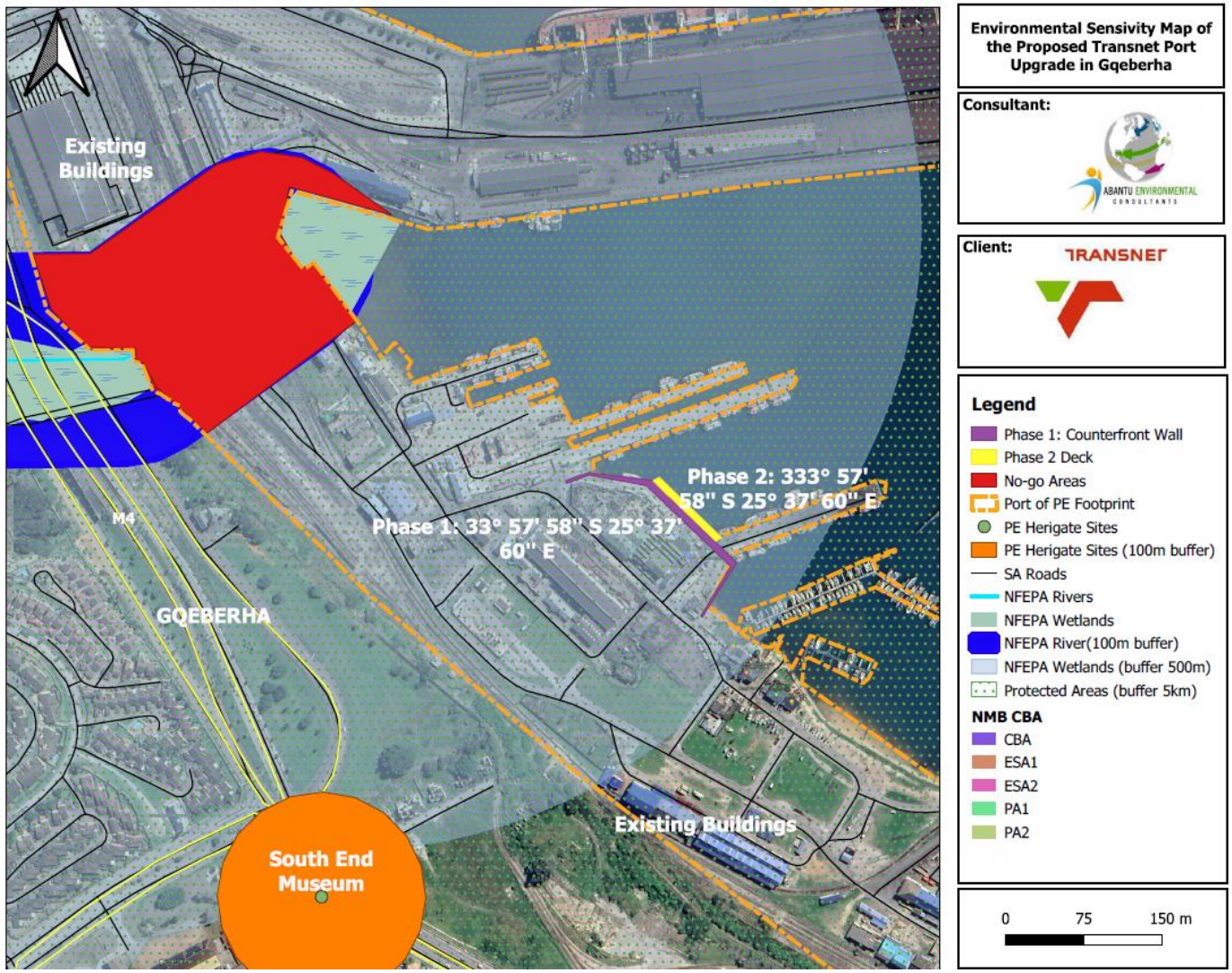

Figure 9: Final Composite Map