Project Specific Draft Environmental Management Programme

TABLE OF CONTENTS

1. Introduction

This project specific Draft Environmental Management Programme (EMPr) is aligned with the Transnet Capital Projects Construction Environmental Management Plan (CEMP) (ENV-STD-001 Rev00) dated September 2011 and the Transnet Capital Projects Standard Environmental Specification (SES) (ENV-STD-002 Rev00) dated September 2011, and must be read in conjunction with these documents.

1.1. Project Description

Transnet SOC Limited (hereinafter referred to as Transnet) is proposing to construct landside structures and infrastructure within the Port of Ngqura and Zone 8 of the Coega Industrial Development Zone (IDZ) in the Nelson Mandela Bay Municipality. These landside structures and infrastructure are primarily related to servicing the proposed Bulk Liquid Storage and Handling Facility within Zone 8 of the Coega IDZ and the Port of Ngqura. The proposed project will include the construction of the following:

- A new Entrance Facility towards the east of the Port of Ngqura;
- An Access Road extending from the Entrance Facility to the proposed Tank Farm and towards the berth in the Port of Ngqura;
- Water, Sewer and Stormwater Infrastructure (within the road reserve);
- Servitude and Service Road for Bulk Liquid Pipelines;
- Pipeline Servitude for Proposed Tank Farm Users;
- Boundary Fencing; and
- Electrical Services.

As the registered landowner, Transnet is responsible for providing the associated landside structures and infrastructure to support and service the proposed Bulk Liquid Storage and Handling Facility (also referred to as a Tank Farm). Refer to Appendix A of this EMPr for the proposed layout of the project.

This Draft EMPr is prepared as part of the requirements of the EIA Regulations promulgated under the National Environmental Management Act (NEMA, Act 107 of 1998) as amended (2010). The EMPr is to be submitted to the National Department of Environmental Affairs (DEA) as part of the Application for Environmental Authorisation for the proposed Transnet Landside Structures and Infrastructure project (DEA EIA Reference No. 14/12/18/3/3/1/675). This Draft EMPr is made available for public comment, as part of the Draft Basic Assessment (BA) Report. Following the incorporation of comments from stakeholders, the EMPr is intended as a living document which should continue to be updated regularly, as needed.

1.2. Approach to Preparing the Draft EMPr

A typical EMPr takes the planning and design, construction, operational and decommissioning phases of a project into account. The EMPr is compiled as part of the Basic Assessment (BA) process and is an annexure to the project report.

As highlighted above, the Transnet CEMP and SES have been compiled for implementation across all Transnet infrastructure projects in order to avoid and/or manage potential negative impacts. For the proposed project, both the Transnet CEMP and SES are applicable and form

the basis of this Draft EMPr. This Draft EMPr has been compiled by the CSIR to include the project specific requirements that are not captured in the Transnet CEMP and SES. Both the Transnet CEMP and SES, together with this project specific Draft EMPr (as an annexure); will be submitted to the DEA for decision making. Furthermore, this Draft EMPr will form the basis of the Project Environmental Specification which will be developed by Transnet based on the recommendations provided in the specialist studies and Draft BA Report, as well as the conditions of the Environmental Authorisation.

The structure of the project specific Draft EMPr is as follows:

- Transnet Capital Projects CEMP: ENV-STD-001 Rev00;
- Transnet Capital Projects SES: ENV-STD-002 Rev00; and
- Project Specific Draft EMPr.

The project specific Draft EMPr is structured in a manner that addresses requirements by the Department of Environmental Affairs communicated in the Acknowledgement of Receipt correspondence (dated 24 August 2012). The DEA correspondence is included in Appendix J of the Draft BAR.

This project specific EMPr has been compiled by the CSIR and the various specialists on the team. The details of the Environmental Assessment Practitioner (Mr. Ismail Banoo) are provided in Appendix H of the Draft BA Report.

2. Compliance with EIA Legislation

In terms of legal requirements, a crucial objective of the Draft EMPr is to satisfy the requirements of Regulation 33 of the NEMA EIA Regulations of 18 June 2010 which came into effect on 2 August 2010. These regulations prescribe the content of the EMPr and specify the type of supporting information that must accompany the submission of the report to the authorities. An overview of where the requirements are addressed in this EMP is presented in Table 1 below.

Table 1: Compliance with Section 33 of the EIA Regulations (Government Gazette 18 June 2010, as amended) and Section 24N of the National Environmental Management Act, 1998 (Act No. 107 of 1998)

Requirements of Section 33 of the EIA Regulations (Government Gazette 18 June 2010, as amended) and section 24N of the National Environmental Management Act, 1998 (Act No. 107 of 1998)	Where it is included in this Draft EMPr
(i) the person who prepared the environmental management programme; and (ii)the expertise of that person to prepare an environmental management programme;	Section 2
(b) information on any proposed management or mitigation measures that will be taken to address the environmental impacts that have been identified in a report contemplated by these Regulations, including environmental impacts or objectives in respect of - (i) planning and design; (ii) pre-construction and construction activities; (iii) operation or undertaking of the activity; (iv) rehabilitation of the environment; and closure, where relevant.	Mitigation objectives and management actions columns in Sections 4 to 13.
(c) a detailed description of the aspects of the activity that are	Section 1.1 (and Section 1 of the

Requirements of Section 33 of the EIA Regulations (Government Gazette 18 June 2010, as amended) and section 24N of the National Environmental Management Act, 1998 (Act No. 107 of 1998)	Where it is included in this Draft EMPr
covered by the draft environmental management programme;	Draft BAR)
(d) an identification of the persons who will be responsible for the implementation of the measures contemplated in paragraph (b);	Monitoring-Responsibility column of the Sections 4 to 13.
(e) proposed mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon;	Monitoring-Methodology column of the Sections 4 to 13.
(f) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development, including, where appropriate, concurrent or progressive rehabilitation measures.	Sections 4 to 13 of the Draft EMPr
(g) a description of the manner in which it intends to - (v) modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (vi) remedy the cause of pollution or degradation and migration of pollutants; (vii) comply with any prescribed environmental management standards or practices; (viii) comply with any applicable provisions of the Act regarding closure, where applicable; (ix) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;	Sections 4 to 13 of the Draft EMPr
(h) time periods within which the measures contemplated in the environmental management programme must be implemented;	Monitoring-Frequency column in Sections 4 to 13
(i)the process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of undertaking a listed activity.	Management actions column in Sections 4 to 13 of the Draft EMPr
(j) an environmental awareness plan describing the manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work; and risks must be dealt with in order to avoid pollution or the degradation of the environment;	Section 12 of the Draft EMP.
(k) where appropriate, closure plans, including closure objectives.	Not applicable (a closure plan will need to be prepared if and when the proposed project is decommissioned, in accordance with best practice and legislative requirements applicable at the time).

2.1. Content of the Project Specific Draft EMPr

Each section of the project specific Draft EMPr is divided into four phases of the project cycle:

- Design Phase;
- Construction Phase;
- Operational Phase; and
- Decommissioning Phase.

The project specific Draft EMPr includes the findings and recommendations of the BA process and specialist studies. It is important to note that the project specific Draft EMPr is considered a live document and must be updated with additional information or actions during the design, construction, operational and decommissioning phases, where required. It is important to note

that the Transnet CEMP and SES are only applicable to the construction phase of the proposed project.

The project specific Draft EMPr follows an approach of identifying an over-arching goal and objectives, accompanied by management actions that are aimed at achieving these objectives. The management actions are presented in a table format in order to show the links between the goal and associated objectives, actions, responsibilities, monitoring requirements and targets. The management plans for the design, construction, operation and decommissioning phases consist of the following components:

- Impact: The potential positive or negative impact of the development that needs to be enhanced, mitigated or eliminated;
- Mitigation/Management Action: The actions needed to achieve the objectives of enhancing, mitigating or eliminating impacts; and
- Monitoring: The key monitoring actions required to check whether the objectives are being achieved, taking into consideration methodology, frequency and responsibility.

The DEA requirements for the Draft EMPr (as indicated in the correspondence dated 24 August 2012) are noted in Table 2 below.

Table 2: DEA Requirements for the Draft EMPr

DEA Requirements	Relevant Section in the EMPr
▪ An alien invasive management plan to be implemented during construction and operation of the facility. The plan must include mitigation measures to reduce the invasion of alien species and ensure the continuous monitoring and removal of alien species is undertaken.	4
▪ A plant rescue and protection plan which allows for the maximum transplant of conservation important species from areas to be transformed. This plan must be compiled by a vegetation specialist familiar with the site and in consultation with the ECO and be implemented prior to commencement of the construction phase.	5
▪ A re-vegetation and rehabilitation plan to be implemented during the construction and operation of the facility including timeframes for the restoration which must indicate rehabilitation within the shortest possible time after completion of construction activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats.	5
▪ An open space management plan to be implemented prior to construction and operation of the facility.	6
▪ A traffic management plan for the site access roads to ensure that no hazards would result from the increased truck traffic and that traffic flow would not be adversely impacted. This plan must include measures to minimise impacts on local commuters e.g. limiting construction vehicles travelling on public roadways during the morning and late afternoon commute time and avoid using roads through densely populated built up areas so as not to disturb existing retail and commercial operations.	7
▪ A storm water management plan to be implemented during construction and operation of the facility. The plan must ensure compliance with applicable regulation and prevent off site mitigation of contaminated storm water or increased soil erosion.	8

DEA Requirements	Relevant Section in the EMPr
The plan must include the construction of appropriate design measures that allow surface and subsurface movement of water along drainage lines so as not to impede natural surface and subsurface flows. Drainage measures must promote the dissipation of storm water run-off.	
▪ An erosion management plan for monitoring and rehabilitating erosion events associated with the facility. Appropriate erosion mitigation must form part of this plan to prevent and reduce the risk of any potential erosion.	9
▪ An effective monitoring system to detect and leakage or spillage of all hazardous substances during their transportation, handling, use and storage. This must include precautionary measures to limit the possibility of oil and other toxic liquids from entering the soil or storm water systems.	10

2.2. Goal for Environmental Management

The overall goal for environmental management for the Transnet Landside Infrastructure project is to construct and operate the project in a manner that:

- Minimises the ecological footprint of the project on the local environment;
- Minimises impacts on fauna, flora and freshwater ecosystems;
- Facilitates harmonious co-existence between the project and other land uses in the area; and
- Contributes to the environmental baseline and understanding of environmental impacts of development in the Port of Ngqura.

3. Roles and Responsibilities

The roles and responsibilities of the following parties are discussed in the Transnet CEMP and SES:

- Transnet Environmental Manager;
- Transnet Construction Manager;
- Transnet Environmental Specialist;
- Transnet Environmental Officer;
- Contractor's Environmental Officer;
- Environmental Auditor; and
- Contractor.

For the purpose of this project specific Draft EMPr, the roles and responsibilities of the Environmental Control Officer are provided below, as these should be taken into consideration in conjunction with the Transnet CEMP and SES.

3.1. Environmental Control Officer

An independent Environmental Control Officer (ECO) is currently appointed to monitor the compliance of authorised developments within the Port of Ngqura and Coega Industrial Development Zone (IDZ) with the conditions of various Record of Decisions, environmental legislation and recommendations of the Environmental Management Plan, on behalf of the Coega Environmental Monitoring Committee (EMC). Based on this, it is recommended that the existing appointed ECO monitors the proposed construction of the landside structures and

infrastructure, and the existing current arrangements and organizational structure within Transnet is continued.
The roles and responsibilities of the ECO has been aligned with the requirements of the 2007 Record of Decision (Reference Number: 12/12/20/690) and includes the following:

- The ECO must ensure that periodic environmental audits are undertaken on the project implementation.
- An environmental compliance report must be submitted by the ECO on a quarterly basis, in writing, to the EMC. The report must be copied to the Director: Environmental Impact Evaluation of the Department of Environmental Affairs and to provincial authorities.
- The ECO must maintain the following on site:
    - A site diary of visits and audits;
    - An activity schedule for project implementation (to be supplied by Transnet);
    - A copy of the environmental authorisation and relevant permits for reference purposes;
    - A non-conformance register;
    - A public complaint register; and
    - A copy of audits undertaken by the ECO.
- The ECO shall report to and be accountable to the EMC.
- The ECO shall remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is handed over to Transnet by the Contractor for operation.

4. Alien Invasive Vegetation Management Plan

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
a) DESIGN PHASE					
4.1. Increased risk of alien plant invasion	Prevent the establishment and spread of alien invasive plants due to the project activities.	4.1.1. Ensure compliance with Transnet Environmental Specifications, Construction EMP and the Port of Ngqura Alien Invasive Vegetation Management Plan.	Update the alien invasive management plan prior to construction, where required.	Once-off during design phase.	Project Developer (Transnet)
b) CONSTRUCTION PHASE					
4.2. Increased risk of alien plant invasion	Reduce the establishment and spread of alien invasive plants due to the project activities.	4.2.1. Ensure ongoing monitoring during the construction phase to detect and quantify any alien species that may become established and identify the problem species (as per the Conservation of Agricultural Resources Act and Biodiversity Act).	Monitor the presence of alien invasive species on the development site in line with Transnet Environmental Specifications, Construction EMP and Port of Ngqura Alien Invasive Vegetation Management Plan.	Monthly	Transnet Environmental Manager/ Environmental Officer/ECO
		4.2.2. Ensure proper management of soil stockpiles. Do not import soil stockpiles from areas with alien plants to ensure proper management of stockpiles.			
		4.2.3. Undertake rehabilitation of disturbed areas as soon as possible after construction. Stockpile the shallow topsoil layer separately from the subsoil layers. Reinstate the topsoil layers (containing seed and vegetative material) when construction is complete to allow the plants to rapidly re-colonise the bare soil areas.			

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		4.2.4. Keep clearance and disturbance of indigenous vegetation to a minimum. Keep the width and length of earthworks to a minimum.			
		4.2.5. Control any alien plants that become established using registered control methods.	Take action to control alien plants as per requirements in the Transnet Construction EMP, Standard Environmental Specifications and Port of Ngqura Alien Invasive Vegetation Management Plan.	Immediately	Contractor
c) OPERATIONAL PHASE					
4.3. Increased risk of alien plant invasion	Reduce the establishment and spread of alien invasive plants due to the operational activities.	4.3.1. Continue with on-going monitoring programme to detect and quantify any alien species that may become established and identify the highly invasive species during the operation phase.	Monitor the presence of alien invasive species on the development site in line with the Port of Ngqura Alien Invasive Vegetation Management Plan.	Reporting frequency depends on legal compliance framework	Transnet Environmental Manager/ Environmental Officer
		4.3.2. Control any alien plants that become established using registered control methods in line with the Port of Ngqura Alien Invasive Vegetation Management Plan.	Take action to control alien plants as advised by a specialist.	Immediately	Transnet Environmental Manager/ Environmental Officer
d) DECOMMISSIONING PHASE					
4.4. Increased risk of alien plant invasion	Re-vegetation of the disturbed site is aimed at approximating as near as possible to the natural vegetative conditions prevailing prior to construction.	4.4.1. All natural areas must be rehabilitated with species indigenous to the area.	Final external audit of area to confirm that area is rehabilitated to an acceptable level.	Once off	Contractor with advice from a suitable specialist

5. Plant Rescue and Faunal Species Protection Plan (including Re-vegetation and Habitat Plan)

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
a) DESIGN PHASE					
5.1. Impact on ecosystem integrity as a result of the layout and location of the facility and directly associated infrastructure.	Minimise fragmentation and loss of habitats important for ecosystem processes and species of special concern through careful siting and layout planning for the project.	5.1.1. Existing access roads must be used and should be located along the boundaries of existing disturbed areas. The design of the Boundary Fence must allow for the passage of small animals, as far as possible. Furthermore it is recommended that mountable kerbing be used along the proposed access road, which allows for the movement of animals across any roads, especially the smaller species of rodent, tortoises, snakes and lizards. ***Note**: The Environmental Authorisation from DEA may require that the Final Layout be submitted to DEA prior to the start of construction. In this case, such specifications must be included into this section of the updated EMPr.*	Prepare final layout plan and include that in the updated EMPr (with submission to DEA if required).	Once-off during design phase.	Project Developer (Transnet)
		5.1.2. All options within Open Space Management Plan (Revision 9) area 1.1 and 1.1a should be kept to minimum as well as any infrastructure proposed within the Algoa Dune Strandveld. Refer to Appendix B of the project specific Draft EMPr for the project layout in terms of the Coega Open Space Management Plan (Revision 9).			
		5.1.3. Obtain the relevant permits for the removal/destruction of protected plant	Transnet to appoint a suitable Search and	Once-off prior to construction.	Contractor or Specialist

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		species from the relevant Authorities prior to construction. Once these permits are obtained, search and rescue must be undertaken and, where possible, these species must be relocated to a suitable nursery.	Rescue Specialist/ Contractor to undertake translocation of protected species.		
b) CONSTRUCTION PHASE					
5.2. Loss of vegetation and Open Space Management habitat	Minimise loss of natural vegetation and Open Space Management habitat. Minimise impacts on natural vegetation in sensitive habitats.	5.2.1. Existing access roads/servitudes must be used and should be located along the boundaries of existing disturbed areas, if possible.	Compile plan pre-construction.	When finalizing layout plan	Project Developer (Transnet)
		5.2.2. Sensitive habitats should be clearly demarcated as no go areas during the construction phase to avoid accidental impacts. This includes the *Syncarpha recurvata* populations, which is indicated in Appendix B. This area should be cordoned off prior to the construction process and treated as a no-go area during construction.	Strict control over the behaviour of construction workers, restricting activities to within demarcated areas for construction.	Daily	Transnet Environmental Manager/ Environmental Officer
		5.2.3. A Stormwater Management Method Statement must be developed for the construction phase by each Contractor.	Compile a Stormwater Management Method Statement.	Prior to construction	Contractor
		5.2.4. Unnecessary impacts on surrounding natural vegetation must be avoided during construction. All construction vehicles should remain on clearly demarcated roads.	Strict control over the behaviour of construction workers, restricting activities to within demarcated areas for	Daily	Transnet Environmental Manager/ Environmental Officer and Contractor

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
			construction.		
		5.2.5. Undertake rehabilitation of disturbed areas as soon as possible after construction. Stockpile the shallow topsoil layer separately from the subsoil layers. Reinstate the topsoil layers (containing seed and vegetative material) when construction is complete to allow the plants to rapidly re-colonise the bare soil areas.	Monitor activities and record and report non-compliance.	As required after construction	Transnet Environmental Manager/ Environmental Officer/ECO
		5.2.6. No fires must be allowed on site.	Strict control and proper education of staff to prevent misconduct.	Daily	Transnet Environmental Officer
		5.2.7. Keep clearance and disturbance of indigenous vegetation (such as Open Space Management Plan (Revision 9) area 1.1 and 1.1a and Algoa Dune Strandveld) to a minimum. Keep the width and length of earthworks to a minimum. Refer to Appendix B of the project specific Draft EMPr for the project layout in terms of the Coega Open Space Management Plan (Revision 9).	Transnet Environmental Officer must monitor activities and record and report non-compliance.	Daily	Transnet Environmental Officer
5.3. Loss of Species of Special Concern and their	Minimise impacts on species of special concern and	5.3.1. Keep clearance and disturbance of indigenous vegetation (such as Open Space Management Plan (Revision 9) area 1.1 and 1.1a and Algoa Dune	Transnet Environmental Officer must monitor activities and record	Daily Once off training	Transnet Environmental Officer

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
habitats	protected trees.	Strandveld) to a minimum. Keep the width and length of earthworks to a minimum. Unnecessary impacts on surrounding natural vegetation must be avoided. Refer to Appendix B of the project specific Draft EMPr for the project layout in terms of the Coega Open Space Management Plan (Revision 9). All operation and maintenance vehicles to remain on the roads and no driving off road allowed. No unauthorized persons should be allowed onto the site.	and report non-compliance. Environmental Awareness Training to be conducted.	and ensure that all new staff are inducted. Training should be repeated bi-annually.	
		5.3.2. No protected plant may be removed or disturbed unless the necessary permit or license has been applied for and obtained from the relevant regulating authority.	Transnet Environmental Officer must monitor activities and record and report non-compliance.	Daily	Transnet Environmental Officer
		5.3.3. Table 1 of the Biodiversity Assessment in Appendix D.4 of the Draft BAR indicates the species that will require permits prior to removal or destruction (prior to construction commencing). These species, where possible, should then be relocated to the suitable nursery or transplanted directly into landscaped or open space areas.	Transnet Environmental Officer must monitor activities and record and report non-compliance.	As required during site clearing and construction	Transnet Environmental Officer/ Environmental Manager
c) OPERATIONAL PHASE					
5.4. Loss of Species of Special Concern and their	Control loss of natural vegetation	5.4.1. Unnecessary impacts on surrounding natural vegetation (such as Open Space Management Plan (Revision 9) area 1.1	Strict control over the behaviour of operation workers,	Monthly	Transnet Environmental

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
habitats, Vegetation and OSMP area	during operation. Prevent impacts on natural vegetation in sensitive habitats and species of special concern.	and 1.1a and Algoa Dune Strandveld) must be avoided. Refer to Appendix B of the project specific Draft EMPr for the project layout in terms of the Coega Open Space Management Plan (Revision 9). All operation and maintenance vehicles to remain on the roads and no driving off road allowed. No unauthorized persons should be allowed onto the site.	restricting activities to within demarcated areas for operation. Strict control and proper education of staff to prevent misconduct.		Officer
		5.4.2. No fires must be allowed on site.			
		5.4.3. Undertake maintenance of rehabilitated areas in accordance with the rehabilitation and landscaping plan, as well as the project specific environmental specification that will be prepared for this proposed landside structures and infrastructure project based on the specialist studies and Draft BAR.	Monitor topsoil removal and rehabilitation activities, and record and report non-compliance.	Weekly or Monthly	Transnet Environmental Officer
		5.4.4. Continue with on-going monitoring programme to detect and quantify any alien species that may become established and identify the highly invasive species during the operation phase.	Monitor the presence of alien invasive species on the development site in line with the Port of Ngqura Alien Invasive Vegetation Management Plan.	Reporting frequency depends on legal compliance framework	Transnet Environmental Manager/ Environmental Officer
5.5. Increased animal mortality on roads	Minimise loss of fauna as a result of road mortalities.	5.5.1. Create awareness during staff induction programmes. Staff must be made aware of the general speed limits as well as the potential animals that may cross and how to react in these situations.	Conduct staff awareness training programmes.	Once-off training and ensure all new staff are inducted.	Transnet Environmental Officer

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
5.6. Permanent barriers to animal movement	Minimise the impact of the boundary fence and other barriers to animal movement. Promote the conservation of faunal communities that occur within the project area.	5.6.1. The boundary fencing should allow for the passage of small and medium sized mammals and all forms of mesh fencing should be avoided.	Ensure no modifications are made to the design of the fence without prior consent from the Project Developer.	On-going	Transnet Environmental Manager/ Environmental Officer
		5.6.2. Ensure that no larger fauna enter and become trapped within the fenced-off area, by keeping all gates closed to ensure that they are excluded.	Monitor and record passage of small and medium-sized mammals through the fence.	Weekly	Transnet Environmental Officer
		5.6.3. Ensure that the Boundary Fence is monitored for animal mortality and animals that become trapped in the fence.	Report and record animal mortalities.	Weekly	Transnet Environmental Officer
d) DECOMISSIONING PHASE					
5.7. Rehabilitation of flora on site	Re-vegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to operation.	5.7.1. All damaged areas shall be rehabilitated upon completion of the contract.	Conduct a final external audit to confirm that area is rehabilitated to an acceptable level.	Once off	Contractor and Transnet Environmental Manager/ Environmental Officer
		5.7.2. All natural areas must be rehabilitated with species indigenous to the area. Ensure compliance with Transnet Environmental Specifications, and Construction EMP.			
		5.7.3. Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas.			

6. Open Space Management Plan

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
a) DESIGN PHASE					
6.1. Loss of Vegetation, Open Space Management Plan area, and Species of Special Concern and their habitats	Restrict the extent of clearing and consequent habitat loss.	6.1.1. All options within Open Space Management Plan area 1.1 and 1.1a should be kept to minimum as well as any infrastructure proposed within the Algoa Dune Strandveld. Refer to Appendix B of the project specific Draft EMPr for the project layout in terms of the Coega Open Space Management Plan (Revision 9).	Ensure that the requirements of the Coega OSMP are met.	During the design phase.	Project Developer (Transnet)
6.2. Increased risk of alien plant invasion	Prevent the establishment and spread of alien invasive plants due to the project activities.	6.2.1. Ensure compliance with Transnet Environmental Specifications, Construction EMP and the Port of Ngqura Alien Invasive Vegetation Management Plan.	Update the alien invasive management plan prior to construction, where required.	Once-off during design phase.	Project Developer (Transnet)
b) CONSTRUCTION PHASE					
6.3. Loss of Vegetation, Open Space Management Plan area, Species of Special Concern and their habitats	Reduce disturbance of natural vegetation.	6.3.1. Clearing of vegetation should be kept to a minimum, keeping the width and length of the earthworks to a minimum.	Transnet Environmental Officer must monitor activities and record and report non-compliance.	Daily during construction.	Transnet Environmental Officer
c) OPERATIONAL PHASE					
6.4. Increased risk of alien plant invasion	Ensure that the site is kept free from alien invasive	6.4.1. Continuously monitor the site and remove alien invasive species that are found.	Monitor the presence of alien invasive species on the development site in	Reporting frequency depends on legal	Transnet Environmental Manager/ Environmental

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
	species.		line with Port of Ngqura Alien Invasive Vegetation Management Plan.	compliance framework	Officer
6.5. Increased animal road mortality	Minimise loss of fauna as a result of road mortalities.	6.5.1. Create awareness during staff induction programmes. Staff must be made aware of the general speed limits as well as the potential animals that may cross and how to react in these situations.	Conduct staff awareness training programmes.	Once-off training and ensure all new staff are inducted.	
6.6. Permanent barriers to animal movement	Minimise the impact of the boundary fence and other barriers to animal movement.	6.6.1. The boundary fencing should allow for the passage of small and medium sized mammals and all forms of mesh fencing should be avoided. Ensure that no larger fauna enter and become trapped within the fenced-off area, by keeping all gates closed to ensure that they are excluded.	Monitor and record passage of small and medium-sized mammals through the fence.	Weekly	

7. Traffic Management Plan

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
a) CONSTRUCTION PHASE					
7.1. Reduction in road-based Level of Service on public roads due to increase in traffic volumes during construction (staff and materials).	Reduce the volume of trucks and private cars on the road network during construction.	7.1.1. Encourage the use of public transport (buses and/or minibus taxis) to convey construction personnel to the site as this will reduce the volume of private cars on the road network. It will be beneficial to arrange minibus transport services for workers during construction of the proposed project. The Contractor may appoint a transport provider and may check that the contracted minibus service is provided as per agreement.	Contractor may record arrival and departure times as well as number of workers using minibuses.	Once a week on a randomly selected day	Appointed Contractor
		7.1.2. Encourage the use of large vehicles or truck-trailer combinations for ready-mix concrete/batch plant material delivery in order to reduce the number of trucks on the roads. The Transnet Project Manager to request Contractors to arrange deliveries in larger vehicles where possible and if available turning areas and access roads allow.	Construction monitoring staff may record number and size of vehicles making the deliveries to site, as part of their normal monitoring of delivery vehicles.	Record daily and report effectiveness at weekly site meetings with contractors	Transnet Construction Project Manager
		7.1.3. Overloading of vehicles should be avoided to limit the impact on the structural capacity of the N2. Transnet Health and Safety Officer to monitor heavy vehicles for overloading during construction activities. Random visual inspection	Transnet Health and Safety Officer to perform visual inspection of vehicles during construction.	Random visual inspection of vehicles weekly by the Transnet Health and Safety Officer during the	Transnet Health and Safety Officer

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		of vehicles to be undertaken during construction.		construction phase.	
7.2. Accelerated degradation of road structure due to construction traffic.	Reduce degradation of road structure during construction.	7.2.1. Overloading of vehicles should be avoided to limit the impact on the structural capacity of the N2. Transnet Health and Safety Officer to monitor heavy vehicles for overloading during construction activities. Random visual inspection of vehicles to be undertaken during construction.	Transnet Health and Safety Officer to perform visual inspection of vehicles during construction.	Random visual inspection of vehicles weekly by the Transnet Health and Safety Officer during the construction phase.	Transnet Health and Safety Officer
7.3. Increased number of road accidents due to increased traffic during construction.	Reduce number of road accidents due to increased traffic during construction.	7.3.1. Well maintained vehicles should be used together with well trained drivers during the construction phase of the proposed project. Vehicle maintenance and driver competency should be monitored through the implementation of a Health and Safety Management Plan. The Plan could specify the need for proof of driver competency as well as the need for vehicle checks to ensure that vehicles are roadworthy and hence, do not pose a safety risk. The Contractors must ensure that construction vehicles are roadworthy, properly serviced and maintained.	Transnet Health and Safety Officer to perform random checks of driver licenses and conduct random visual inspections of construction vehicles for roadworthiness.	Random visual inspection of vehicles weekly by the Transnet Health and Safety Officer during the construction phase.	Transnet Health and Safety Officer
b) OPERATIONAL PHASE					
7.4. Reduction in road-based Level of Service on	Reduce the volume of private cars on the road network during operation.	7.4.1. The use of public transport to convey personnel to the site should be encouraged. An option that could be	Engage with relevant parties to encourage the use of public	Prior to operational phase	Project Developer (Transnet)

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
public roads due to an increase in traffic volumes during operation (staff).		considered is to purchase tickets for workers for use on the NMBM Integrated Public Transport System (IPTS) to further encourage the use of scheduled public transport services (i.e. subsidised fares for workers would further encourage the use of public transport).	transport during operations.	commences	
7.5. Increased number of road accidents due to increased traffic during operation.	Reduce number of road accidents due to increased traffic during operation.	7.5.1. Well maintained vehicles should be used together with well trained drivers during the operational phase of the proposed project. No heavy vehicle traffic will be generated during the operation of the Landside Structures and Infrastructure.	During operation, Transnet security staff to visually check roadworthiness (as part of protocol).	As part of protocol	Transnet Security Staff

8. Stormwater Management Plan (including measures to protect hydrological features)

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
a) DESIGN PHASE					
8.1. Impact of the project if a detailed Stormwater Management Plan is not correctly prepared.	To limit the effect of uncontrolled storm water run-off from developed areas onto natural areas	8.1.1. Review existing Port of Ngqura Stormwater Management Plan and update where required. The plan must ensure best practice is followed on site.	Identify potential sources of pollution and design methods of keeping "clean" and "dirty" water separate.	During the design phase.	Project Developer (Transnet)/ECO
b) CONSTRUCTION PHASE					
8.2. Impact of contaminated stormwater discharge into the environment	To prevent contaminated stormwater from entering into and adversely impacting on freshwater ecosystems. To reduce sedimentation of nearby water courses To apply best practice principles in managing risks to storm water pollution.	8.2.1. A Stormwater Management Method Statement must be developed for the construction phase by each Contractor.	Compile a Stormwater Management Method Statement.	Prior to construction	Contractor
		8.2.2. Install silt fencing or similar alternative at the perimeters of actively disturbed areas (as needed on down slope sides).	Monitor activities and record and report non-compliance.	As needed during the construction phase	Transnet Environmental Officer/ECO
		8.2.3. Reinforce soil slopes to minimise erosion during rehabilitation (as needed, and once construction in a specific area has ceased).			
		8.2.4. Divert stormwater runoff from uncovered bulk construction waste piles to suitable collection/treatment systems.			
		8.2.5. Perform periodic inspections and maintenance of soil erosion measures and stormwater			

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		control structures.			
8.3. Impact of changes to water quality (surface and groundwater)	To reduce the impact on instream biota and the functioning of plants as a result of changes to water quality.	8.3.1. Fuels used for construction and chemicals used for road surfacing must be stored safely on site and surrounded by bunds. Chemical storage containers must be regularly inspected so that any leaks are detected early.	Monitor activities and record and report non-compliance.	Daily	Transnet Environmental Officer and Contractor
		8.3.2. All stockpiles must be protected from erosion and stored on flat areas where run-off will be minimised.			
		8.3.3. Stockpiles must be located away from river channels i.e. greater than 32 m or outside of the 1:100 floodline whichever is greater. Refer to Appendix C for the delineation of water bodies on site (32 m buffer) and Appendix D for the 1:100 floodline for the Coega River.			
		8.3.4. Erosion and sedimentation into water bodies must be minimised through effective stabilisation (such as silt traps, gabions and Reno mattresses) and re-vegetation of any disturbed areas.			

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		8.3.5. The construction camp and necessary ablution facilities for construction workers must be beyond the 32 m buffer for rivers and streams. Refer to Appendix C for the delineation of water bodies on site.			
c) OPERATIONAL PHASE					
8.4. Stormwater discharge into the environment during operations	To minimise the contamination of stormwater by uncontrolled release of contaminated or grey water. To protect soil resources and prevent soil erosion.	8.4.1. Ensure that there is no indirect impact to the port environment; Transnet needs to monitor and ensure that surrounding properties enforce required stormwater monitoring and management during operation. If no model agreement exists, this should be developed as soon as possible.	Monitor activities and record and report non-compliance.	On-going	Project Developer (Transnet)
		8.4.2. Install and maintain litter traps.			
		8.4.3. As far as reasonably possible, separate “clean” and “dirty” storm water. Runoff from undeveloped land must be kept separate and away from potentially contaminated areas, and be allowed to drain to the natural environment (nearest natural water course/sea).			

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		8.4.4. As far as reasonably possible, capture and contain "dirty" stormwater for appropriate disposal/discharge.			
		8.4.5. All release points into the natural environment must have appropriate energy dissipaters to minimise scouring/erosion.			
		8.4.6. In order to ensure that "clean" stormwater is in fact clean, a suitable stormwater quality monitoring and management programme must be established. Monitoring should at least be conducted at all major site stormwater outlets, as this will allow tracing of problematic areas and required management interventions. Ensure that appropriate emergency procedures are in place to deal with abnormal conditions.			

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
8.5. Diversion and increased velocity of surface water flows – changes to the hydrological regime and increased potential for erosion.	To minimise changes to the hydrological regime and sedimentation of nearby water courses, as well as the potential for erosion.	8.5.1. Gabion structures and rocks should be used where appropriate. It is recommended that stormwater and any runoff generated by the hard surfaces should be discharged into energy dissipation structures, where required. These could be used to enhance the sense of place, if they are planted with indigenous vegetation. These energy dissipation structures should be placed in a manner that flows are managed prior to being discharged back into the natural water courses, thus not only preventing erosion, but also supporting the maintenance of natural base flows within these systems, i.e. hydrological regime (water quantity and quality) is maintained. The stormwater structures and infrastructure should be maintained on a regular basis.	Monitor activities and record and report non-compliance.	As needed during the operation phase	Transnet Environmental Officer/ Environmental Manager
		8.5.2. Where areas with slopes of 1:3 or greater are unavoidable, it is recommended that suitable stabilizing structures and erosion prevention controls be implemented.			
8.6. Diversion and increased velocity	To reduce changes to the volumes and velocity of	8.6.1. Gabion structures and rocks should be used where	Monitor activities and record	As needed during the	Transnet Environmental

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
of surface water flows – reduction in permeable surfaces.	surface water run-off at stormwater outlets as result of hardened surfaces.	appropriate. It is recommended that stormwater and any runoff generated by the hard surfaces should be discharged into energy dissipation structures, where required. These could be used to enhance the sense of place, if they are planted with indigenous vegetation. These energy dissipation structures should be placed in a manner that flows are managed prior to being discharged back into the natural water courses, thus not only preventing erosion, but would support the maintenance of natural base flows within these systems, i.e. hydrological regime (water quantity and quality) is maintained. The stormwater structures and infrastructure should be maintained on a regular basis.	and report non-compliance.	operation phase	Officer/ Environmental Manager
8.7. Impact of changes to water quality (surface and groundwater)	To reduce the impact on instream biota and the functioning of plants as a result of changes to water quality.	8.7.1. Erosion and sedimentation into water bodies must be minimised through effective stabilisation (such as silt traps, gabions and Reno mattresses) and re-vegetation of any disturbed areas. 8.7.2. Install silt and litter traps as part of the Stormwater Management System, where required. The silt	Monitor activities and record and report non-compliance.	As needed during the operation phase	Transnet Environmental Officer/ Environmental Manager

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		and litter traps must be monitored and well maintained (i.e. regularly cleaned etc.). Maintenance requirements should be included in the Stormwater Management Plan.			
d) DECOMMISSIONING PHASE					
8.8. Contaminated stormwater discharge to environment	To prevent the contamination of stormwater by uncontrolled release of contaminated or grey water.	8.8.1. Implement Management Actions as stipulated for the construction phase.	Monitor activities and record and report non-compliance.	On-going	Transnet Environmental Officer/ Environmental Manager, Contractor and ECO

9. Erosion Management Plan

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
a) CONSTRUCTION PHASE					
9.1. Increased wind erosion and resultant deposition of dust	Prevent wind erosion and resultant deposition of dust on the surrounding indigenous vegetation	9.1.1. Sand, stone and cement are to be stored in demarcated areas, and are covered or sealed to prevent wind erosion and resultant deposition of dust on the surrounding indigenous vegetation.	Monitor activities and record and report non-compliance.	Monthly	Contractor and ECO/Transnet Environmental Officer
		9.1.2. During construction, efforts should be made to retain as much natural vegetation as possible on the site, to reduce disturbed areas and maintain plant cover, thus reducing erosion risks. All measures required for the treatment of runoff generated during construction should be in place before site clearing commences.			
9.2. Excessive loss of natural vegetation in development footprint area	Prevent loss of natural vegetation through erosion.	9.2.1. Vegetation clearing during construction must be restricted to the footprint of the project components only. It should be phased to ensure that the minimum area of soil is exposed to potential erosion at any one time.	Monitor activities and record and report non-compliance.	Monthly	Contractor and ECO/Transnet Environmental Officer
		9.2.2. Topsoil stockpiles not used in 3 months after stripping must be seeded to prevent dust and erosion.	Regular monitoring for erosion to ensure that no erosion problems are occurring at the site. All	Weekly initially and thereafter monthly	

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		9.2.3. To prevent erosion, indigenous grasses that seed themselves should (where possible) be left to form a ground cover and kept short.	erosion problems observed should be rectified as soon as possible.		
b) OPERATIONAL PHASE					
9.3. Loss of natural vegetation in development footprint area and resulting impacts on species of special concern	Prevent loss of natural vegetation through erosion.	9.3.1. To prevent erosion, indigenous grasses that seed themselves should (where possible) be left to form a ground cover and be kept short.	Port ECO or specialist or Environmental Officer to advise on seed to be used.	Monthly	Transnet Environmental Officer
		9.3.2. The use of silt fences (or other suitable measures) must be implemented in areas that are susceptible to erosion. Other erosion control measures that can be implemented are as follows: 1) Brush packing with cleared vegetation, 2) Planting of vegetation, 3) Hydro seeding/hand sowing. All erosion control mechanisms need to be regularly maintained.	Monitor efficiency of erosion control measures.	Monthly	
c) DECOMMISSIONING PHASE					
9.4. No specific impacts are associated with the decommissioning phase other than those from the operational phase that will still be relevant for the duration of the decommissioning phase due to on-going occupation of the area, as well as some disturbance during the decommissioning phase (e.g. if the roads need to be de-constructed). Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas. Monitoring: Final external audit of area to confirm that area is rehabilitated to an acceptable level (once off event to be conducted by ECO/Transnet Environmental Officer/Environmental Manager).					

10. Initial Hazardous Substances Leakage or Spillage Monitoring System

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
a) CONSTRUCTION PHASE					
10.1. Contamination of soil and risk of damage to vegetation and/or fauna through spillage of fuels and oils	To control and eliminate fuel and oil spillages which may result in soil contamination and damage to vegetation and/or fauna.	10.1.1. Contractor to compile a Method statement for refuelling activities under normal and emergency situations.	Monitor the handling and storage of fuels and oils and monitor if spillages have taken place.	Daily	Transnet Environmental Officer and Contractor
		10.1.2. Monitor construction equipment and machinery daily to ensure that no fuel spillage takes place.			
		10.1.3. Spilled fuel, oil or grease must be retrieved where possible, and the contaminated soil removed, cleaned and replaced.			
		10.1.4. Contaminated soil must be collected by the Contractor (under observation of Transnet Environmental Officer) and disposed of at a registered waste facility designated for this purpose.			
b) OPERATIONAL PHASE					
10.2. Impacts due to management solid and liquid wastes disposed of on the site during operation phase.	Prevent environmental impacts as a result of the operational phase such as pollution.	10.2.1. All operation waste to be removed from the site by an appointed service provider.	Waste removal and disposal to be monitored throughout operation.	Monthly	Transnet Environmental Officer
		10.2.2. All liquid waste or spills (used oil, paints, lubricating compounds and grease from vehicles passing through the entrance facility) to be packaged and disposed appropriately at a registered landfill site. Alternatively, opportunities to re-sell this liquid waste could be investigated.			

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		10.2.3. Adequate containers for the cleaning of equipment and materials (paint, solvent) must be provided in order to avoid spillages.			
c) DECOMMISSIONING PHASE					
10.3. No specific impacts are associated with the decommissioning phase other than those from the operational phase that will still be relevant for the duration of the decommissioning phase due to on-going occupation of the area.					

11. Specific Project Related Environmental Impacts (outside of those covered in other management plans)

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
a) CONSTRUCTION PHASE					
11.1. Impact on the regional water balance as a result of increased water usage during normal operational procedures in the construction phase.	Reduce water usage for construction activities.	11.1.1. Although a small impact on the available water resources is predicted, water conservation should still be practiced during the construction phase. Water conservation techniques are provided in Section 6.4.3 of the Integrated Water Management Study (Appendix D.3 of this Draft BAR Report). During the construction phase, cleaning methods should aim to minimise water use (such as ensuring that construction work areas are swept before being washed). In addition, water systems should be monitored for leakages on a regular basis to prevent wastage. Construction personnel should be made aware of water conservation practices as part of the environmental awareness training programme.	Monitor water usage and report any non-compliance. Carry out environmental awareness training.	Monthly Once off training and ensure that all new staff are inducted. Training should be repeated bi-annually.	Transnet Environmental Officer
11.2. Discharge of domestic effluent from portable toilets/tanks to the surrounding environment.	Prevent contamination of surrounding environment as a result of incorrect discharge of domestic effluent.	11.2.1. Contractor to implement normal sewage management practises such as regularly servicing toilets and the safe transport and correct disposal of sewage. 11.2.2. Ensure that domestic wastewater (sewage) is disposed correctly at an appropriate location (i.e. sewage water treatment works) for treatment.	Monitor and report any non-compliance. Carry out environmental awareness training.	Monthly Once off training and ensure that all new staff are inducted. Training should be repeated bi-	Transnet Environmental Officer

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		11.2.3. Sufficient ablution facilities (one facility for every 10 persons working on the site) should be provided on site.		annually.	
		11.2.4. Construction personnel should be made aware of sewage management practises as part of the environmental awareness training. Care must be taken to ensure that all personnel on-site during construction are aware of environmental requirements and only make use of the provided facilities for sanitation purposes.			
11.3. Discharge of construction wastewater into the surrounding environment.	Prevent discharge of construction wastewater to the surrounding environment.	11.3.1. Implement proper construction site suggested management actions as suggested within Sections 6.3 and 6.4 of the Integrated Water Management Specialist Study in Appendix D.3 of this Draft BAR). These include providing adequate containment structures, good on-site housekeeping, spillage management, and appropriate collection and disposal.	Monitor activities and record and report non-compliance.	Monthly	Transnet Environmental Officer
11.4. Construction solid waste enters the surrounding environment.	Prevent environmental impacts as a result of the incorrect disposal of solid waste.	11.4.1. Implement best practice as referred to in Section 6.4.1 of the Integrated Water Management Specialist Study in Appendix D.3 of this Draft BAR. This includes, amongst others, removing all waste to an appropriate licensed waste management facility, minimisation of pollution or littering on site by construction personnel and ensure that the construction yard is kept tidy at all	Monitor activities and record and report non-compliance.	Daily or Weekly	Transnet Environmental Officer

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		times.			
11.5. Hazardous waste spills (chemicals, oil, fuel, hydraulic fluids etc.) on site during construction.	Minimise environmental impacts as a result of the hazardous waste spills.	11.5.1. Implement best practice including containment and immediate clean-up of any spillages, collection of chemical/oil wastes and disposal at an appropriate hazardous waste facility (refer to Sections 6.3 and 6.4 of the Integrated Water Management Specialist Study in Appendix D.3 of this Draft BAR). Prevent, minimize and control spills of hazardous waste by: • Providing adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids (e.g. lubricating oils, hydraulic fluids). • Training workers on the correct transfer and handling of fuels and chemicals and the response to spills. • Providing portable spill containment and clean-up equipment on site and training in the equipment deployment. • Assessing the presence of hazardous substances in or on building materials and decontaminating or properly managing contaminated building materials.	Monitor activities and record and report non-compliance.	Daily or Weekly	Transnet Environmental Officer
11.6. Impact on Palaeontology: Destruction, disturbance or sealing-in of fossils exposed on the	Prevent damage and destruction of fossils.	11.6.1. Appoint a professional palaeontologist specialist to carry out monitoring of all excavations deeper than 2 m. Specialist mitigation must involve the recording and	Appoint a professional palaeontologist to monitor all excavations deeper than 2 m within	Once off for all excavations within this region deeper	Project Developer (Transnet)/ECO

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
ground or buried beneath the surface during excavations (over 2 m in depth) and other construction work within the narrow corridor along the eastern bank of the Coega Estuary at 20m or less amsl (Construction of relevant sector of the access road from the tank farm to the berth, the Servitude and Service Road for the Bulk Liquid pipelines; the water, sewer and stormwater pipelines; and the relevant sector of service road along the boundary fence).		judicious sampling of fossil material and associated geological data (e.g. sedimentary context). The palaeontologist must apply for a fossil collection permit from Eastern Cape Province Heritage Resources Agency (ECPHRA) (Contact details: Mr. Sello Mokhanya, 74 Alexander Road, King Williams Town 5600; smokhanya@ecphra.org.za) and all fossil material should be curated at an approved institution (e.g. Albany Museum, Grahamstown). Any fossil material collected must be recorded according to best academic practice and properly curated in an accredited palaeontological collection, such as the Albany Museum, Grahamstown.	this corridor.	than 2 m	
		11.6.2. Carry out general monitoring of all excavations for fossil material by the Environmental Control Officer or Transnet Environmental Officer during the construction phase and all new fossil finds must be reported to ECPHRA (Contact details provided above).	ECO or Transnet Environmental Officer to carry out general monitoring.	All excavations during the construction phase.	ECO/Transnet Environmental Officer
11.7. Impact on Palaeontology: Destruction, disturbance or sealing-in of fossils exposed on the	Prevent damage and destruction of fossils.	11.7.1. Carry out general monitoring of deeper excavations for fossil heritage by the Environmental Control Officer or Transnet Environmental Officer.	ECO or Transnet Environmental Officer to monitor excavations for the remaining	All excavations during the construction phase.	ECO or Transnet Environmental Officer and Contractor

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
ground or buried beneath the surface during excavations and other construction work (above 20 m amsl).		11.7.2. Wherever development involving bedrock excavation occurs, the responsible Environmental Control Officer or Transnet Environmental Officer must be alerted to the possibility of buried fossil heritage, for example by familiarizing themselves with the relevant palaeontological reports for the Coega IDZ (Almond 2010a, 2012). In this light all major bedrock excavations should be examined at regular intervals for fossil material by the Environmental Control Officer or Transnet Environmental Officer during the construction phase.	project components.		
		11.7.3. If any substantial fossil remains are found these must be safeguarded, preferably *in situ*, while the ECPHRA is contacted and a qualified palaeontologist is contracted to record and sample the occurrence.			
11.8. Impact on Archaeology	Prevent damage and destruction of artefacts and materials of heritage significance.	11.8.1. All construction work must be monitored: • An archaeologist must be appointed to inspect (walk through) the areas earmarked for development when the surface vegetation has been removed to establish if there are any archaeological sites/facets/materials. • Alternatively a person must be trained as a site monitor to report to the foreman when archaeological sites are found. This person must monitor all levelling and trenching activities during the construction phase. This	Monitor site prior to removal of vegetation.	Once-off before removal of vegetation. Monitoring by the site monitor must be done daily during clearance of surface vegetation.	Appointed Archaeologist or Contractor and Transnet Environmental Officer

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		can be achieved by referring to the Coega IDZ Heritage Impact Assessment, as well as Appendix B of the Letter of Exemption (Appendix A.2 of the Draft BAR). • If any concentrations of material (especially concentrations of marine shell) are uncovered during development, construction work in that location must be halted and it should be reported to the Albany Museum and/or the South African Heritage Resources Agency (Contact details Tel: 021 462 4502, Fax: 021 462 4509, Email: mgalimberti@sahra.org) immediately so that systematic and professional investigation/excavations can be undertaken. Sufficient time should be allowed to remove/collect such material before construction re-commences. • Appoint a professional archaeologist to investigate the small area on the coast along the eastern boundary of Zone 8 (for Boundary Fence Option 1) before any development takes place in that area.			

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		11.8.2. If an archaeologist or site monitor is not considered, then the construction managers/foremen must be informed, before construction starts, on the possible types of heritage sites which may be encountered during construction.	Monitor construction activities for archaeological materials.	Daily or as confirmed by SAHRA.	Contractor and Transnet Environmental Officer
		11.8.3. If any human remains and/or other archaeological and historical material are uncovered during the construction, such material must be reported to the nearest museum, archaeologist or to the South African Heritage Resources Agency (or the South African Police Services) if exposed, so that a systematic and professional investigation can be undertaken. Sufficient time should be allowed to remove/collect such material before construction re-commences.	Monitor construction activities for archaeological materials.	Daily or as confirmed by SAHRA.	Contractor and Transnet Environmental Officer
11.9. Air Quality Impact: Generation of dust as a result of vegetation clearing, road construction and earthworks.	Reduce the generation of dust during construction.	11.9.1. Ensure that vegetation clearance is restricted to the proposed development area. Undertake vegetation clearance in a sequential manner.	Monitor activities and record and report non-compliance.	Monthly	ECO/Transnet Environmental Officer
		11.9.2. Ensure that cleared areas and unpaved road surfaces are sprayed with water (obtained from an approved source) to minimise dust generation.			
		11.9.3. Ensure that construction vehicles travelling on unpaved roads do not exceed a speed limit of 40 km/hour.			
11.10. Generation of noise as a result of construction	Reduce noise impacts during	11.10.1. Ensure that the equipment is turned off	Monitor activities and record and report non-	Daily or	Transnet Environmental

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
activities and the use of diesel powered equipment and machinery (required for earthworks, layerworks and compacting etc.), as well as construction vehicles.	construction.	when not in use.	compliance.	Weekly	Officer
11.11. Incorrect disposal of construction solid waste which may cause soil pollution.	Reduce environmental impacts associated with incorrect disposal of solid waste.	11.11.1. Ensure that regular waste collection takes place by an approved contractor and waste is disposed at a licensed waste disposal facility. 11.11.2. Ensure that sufficient waste collection bins or waste skips are provided throughout the site.	Monitor activities and record and report non-compliance.	Daily or Weekly	Transnet Environmental Officer
11.12. Visual impacts during the construction phase. Construction activities (and equipment and vehicles) will be visible by users of the N2 National Road. The visual intrusion will be relatively low since the construction will take place among many other developments in the Port and within an industrial area.	Reduce visual impacts during the construction phase.	11.12.1. Undertake sequential removal of vegetation as opposed to once-off removal.	Monitor activities and record and report non-compliance.	Daily during bush clearing activities	Transnet Environmental Officer/ECO
b) OPERATIONAL PHASE					
11.13. Impact on the regional water balance as a result of increased water usage during normal operational	Reduce water usage.	11.13.1. Water conservation should still be practiced during the operational phase. Water conservation techniques are provided in Section 6.4.3 of the Integrated Water Management Study (Appendix D.3	Monitor water usage and report any non-compliances and excessive usage.	Monthly	Transnet Environmental Officer/ Environmental

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
phase.		of this Draft BA Report). 11.13.2. Ensure that necessary pipe infrastructure is provided to convey the specified quantities of water for likely future scenarios.			Manager
11.14. Domestic effluent discharge into the sewer enters surrounding environment.	Prevent contamination of surrounding environment as a result of incorrect discharge of domestic effluent.	11.14.1. A maintenance plan and management of the sewer pipes in case of emergency should be developed. Routine checks (of the sewer pipes) to identify leaks, breakages and bursts should be conducted. The proposed project should comply with the Transnet National Ports Authority Operation EMP. Amendments to the Operation EMP should be made where required.	Monitor activities and record and report non-compliance.	Monthly	
c) DECOMMISSIONING PHASE					
11.15. Domestic effluent collection in portable toilets/tanks for transport to appropriate treatment facility enters environment	Prevent contamination of surrounding environment as a result of incorrect discharge of domestic effluent.	11.15.1. Normal sewage management practises required (e.g. regularly empty toilets, safe transport and disposal of sewage, employee training, etc.)	Monitor activities and record and report non-compliance.	On-going	Transnet Environmental Officer/ Environmental Manager/ECO
11.16. Demolition solid waste enters environment	Prevent environmental impacts as a result of the incorrect disposal of solid waste.	11.16.1. Implement Management Actions as stipulated for the construction phase.			
11.17. Hazardous waste spills	Prevent	11.17.1. Implement Management Actions as			

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
(oil, chemicals, etc.) on site during decommissioning	environmental impacts as a result of the hazardous waste spills.	stipulated for the construction phase, including containment and immediate clean-up of any spillages, collection of chemical/oil wastes, disposal at an appropriate hazardous waste facility, etc. (as previously noted).			

12. Environmental Awareness Plan

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
a) DESIGN PHASE					
12.1. Potential impacts resulting of the lack of overall compliance with the Environmental conditions of approval (issued by DEA)	Ensure compliance with all Environmental Conditions of Approval (issued by DEA)	12.1.1. Audit the implementation of the EMP requirements. 12.1.2. Establish clear and transparent reporting of the activities undertaken with regard to all recommendations included in the EMP.	Audit report on compliance with actions and monitoring requirements.	Monthly by Environmental Officer as per CEMP. Quarterly by ECO.	ECO and Transnet
b) CONSTRUCTION PHASE					
12.2. Potential risk of fire due to construction activities or behaviour of staff on site during the construction phase	Prevent fire on site resulting of workers smoking in undesignated areas	12.2.1. Designate smoking areas where the fire hazard could be regarded as insignificant. 12.2.2. Educate workers on the dangers of open and/or unattended fires.	Adhoc checks to ensure workers are smoking only in designated areas. Ensure fire safety requirements are	Daily On-going	Contractor, Transnet Environmental Officer/ECO

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
		12.2.3. Open fires must be prohibited. Appropriate fire safety training should also be provided to staff that are to be on the site for the duration of the construction phase.	well understood and respected by workers.		
		12.2.4. Fire-fighting equipment must be made available at various appropriate locations on the construction site.			
12.3. Inappropriate behaviour of civil contractors and sub-contractors during the construction phase	Prevent unnecessary impacts on the surrounding environment by ensuring that contractors are aware of the requirements of the EMP.	12.3.1. All litter will be deposited in a clearly labelled, closed, animal-proof disposal bin in the construction area; particular attention needs to be paid to food waste.	Check compliance with specified conditions using a report card, and allocate fines when necessary.	Weekly or bi-weekly	Transnet Environmental Officer/ Environmental Manager
		12.3.2. No person other than a qualified specialist or personnel authorised by Transnet, will disturb or remove plants outside the demarcated construction area.			
		12.3.3. No person other than a qualified specialist or personnel authorised by Transnet, will disturb animals on the site.			
		12.3.4. Educate workers on site about suitable behaviour on site and initiate environmental awareness. Staff must be informed that no trapping, snaring or feeding of any animal will be allowed.	Conduct environmental awareness training	Once off training and ensure that all new staff are inducted. Training should be repeated bi-	Transnet Environmental Officer/ Environmental Manager

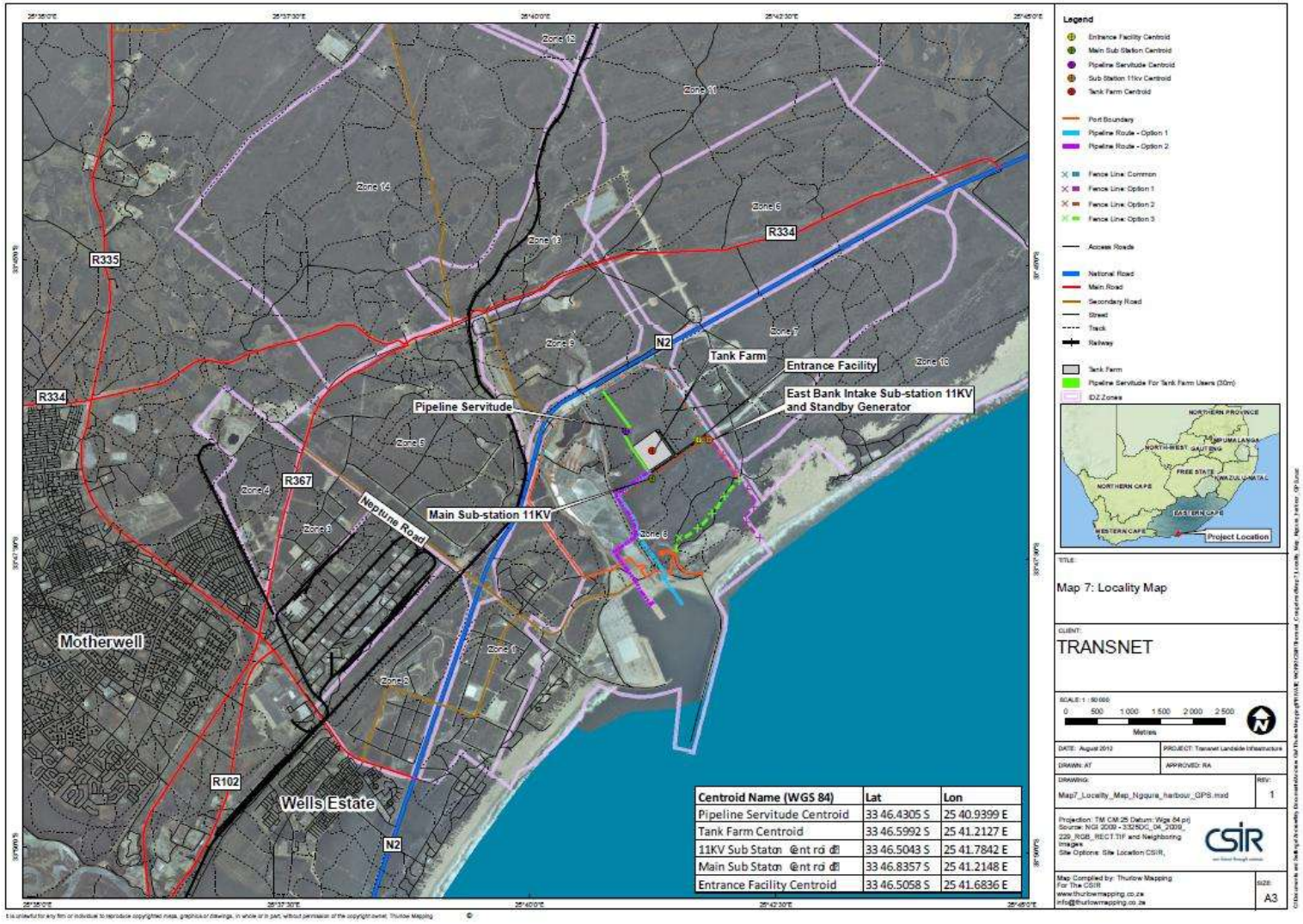
Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
				annually.	
c) OPERATIONAL PHASE					
12.4. Ensure that workers are not smoking/ starting fires (i.e. cooking, heating purposes) in undesignated areas during operation phase	Ensure an appropriate and efficient fire prevention/ management plan is implemented during the operation phase.	12.4.1. Designate smoking areas where the fire hazard could be regarded as insignificant.	Adhoc checks to ensure workers are smoking only in designated areas	Monthly	Transnet Environmental Officer/ Environmental Manager
		12.4.2. Educate workers on the dangers of open and/or unattended fires.			
		12.4.3. Ensure that adequate fire-fighting equipment is available and easily accessible on site.	Maintenance of fire-fighting equipment	Yearly	
12.5. Excessive generation of waste on site during operation phase	Minimise the production of general waste.	12.5.1. Promote waste reduction, re-use, and recycling opportunities on site during the operation phase.	Monitor waste generation and collection throughout operation.	Monthly	Transnet Environmental Officer/ Environmental Manager
		12.5.2. Ensure an adequate and sustainable use of resources			
12.6. Non respect of waste management practices	Ensure compliance with waste management legislation Minimise pollution of the environment	12.6.1. Control and implement waste management plans. Ensure that relevant legislative requirements are respected.	Control of waste management practices throughout operation phase.	Monthly	Transnet Environmental Officer/ Environmental Manager
		12.6.2. Determine specific areas on site for temporary management of waste.			

13. Rehabilitation Plan

Impact	Mitigation Objectives	Management actions	Monitoring		
			Methodology	Frequency	Responsibility
a) CONSTRUCTION PHASE					
13.1. Prevent the proliferation of alien invasive species	To ensure that all areas affected by the project are appropriately rehabilitated and re-vegetated in a manner congruent with the surrounding bio-physical environment. To prevent the spread of alien invasive species.	13.1.1. Lay down areas must be rehabilitated upon completion of work on site.	Remove all contaminated soil and clear waste from the site.	On completion of each phase	Contractor and ECO/ Transnet Environmental Officer
		13.1.2. A rehabilitation plan in the form of a method statement must be compiled by the Contractor and submitted to Transnet for approval prior to completion of construction work. The plan must include timeframes for restoration which must indicate rehabilitation within the shortest possible time after completion of construction activities to reduce the amount of habitat converted at any one time and to speed up the recovery of natural habitats.	Develop a detailed rehabilitation plan (method statement) taking best practice and the receiving environment into account.	Prior to completion of construction work.	Contractor and Transnet
b) DECOMMISSIONING PHASE					
13.2. Restore the site to a natural pre-developed state as far as possible.	To restore the natural characteristics of the site to the pre-construction level as far as possible.	13.2.1. Re-vegetate areas where infrastructure is removed. (Also see row 9.4 above).	Identify suitable indigenous vegetation and re-vegetate using appropriate species.	At the end of the decommissioning phases.	Contractor and ECO/Transnet Environmental Officer

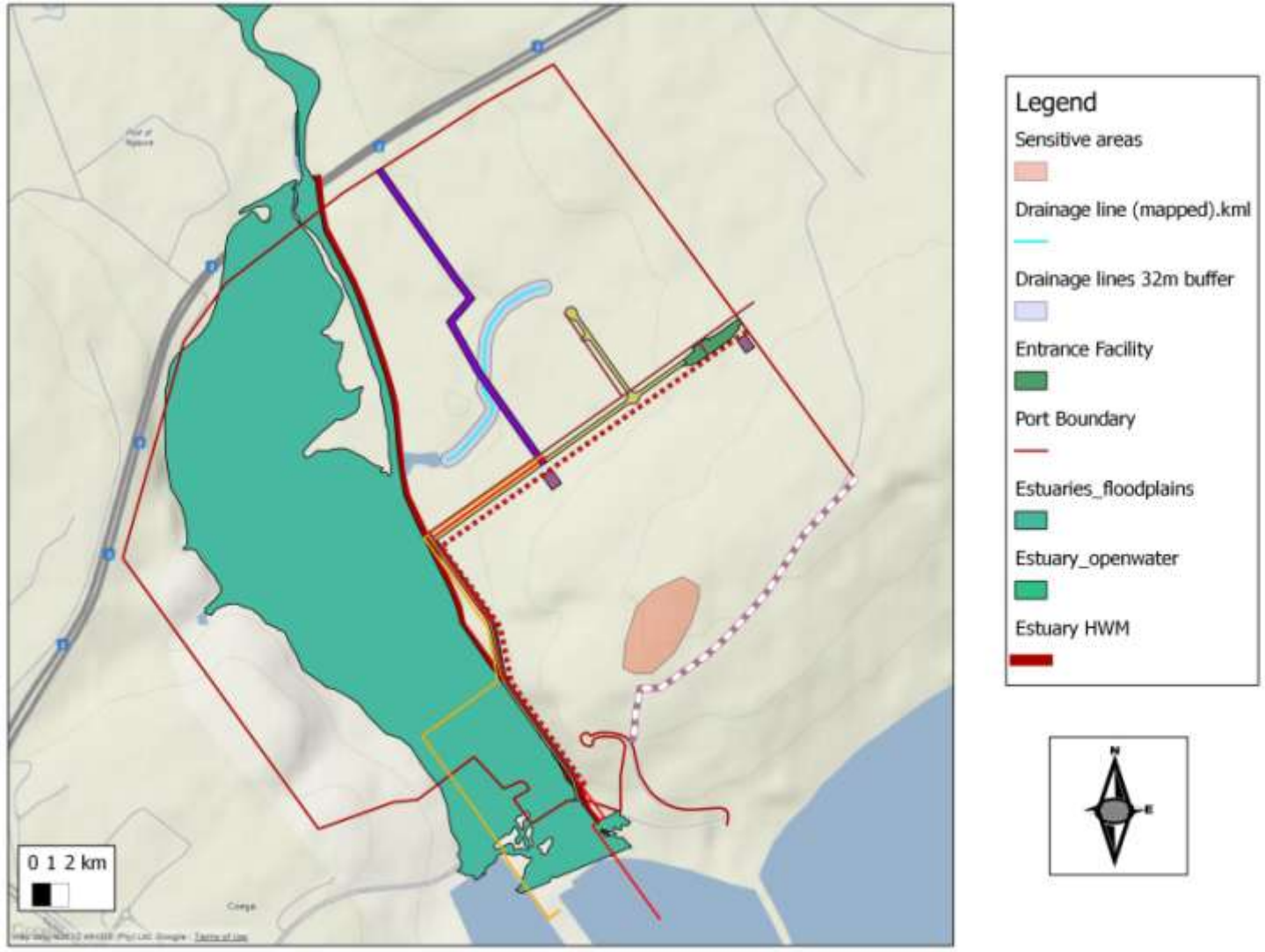
APPENDICES

Appendix A: PROPOSED LAYOUT MAP



Appendix B: PROPOSED LAYOUT MAP IN RELATION TO THE COEGA OSMP (REVISION 9)

Appendix C: PROPOSED LAYOUT MAP IN RELATION TO DELINEATED WATER BODIES



Appendix D: PROPOSED LAYOUT MAP IN RELATION TO SENSITIVE AREAS AND 1:100 FLOODLINE