APPENDIX G: Environmental Management Programme (EMPr)

CONTENTS

1 INTRODUCTION

This Draft Environmental Management Programme (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 Freight Rail Port Nolloth Lighthouse (DEA Reference No. 14/12/16/3/3/1/671). 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 and should continue to be updated regularly.

1.1 Project Description

Transnet Freight Rail (RME) (hereafter referred to as TFR), a division of Transnet Ltd., proposes to construct a lighthouse on ERF 335 in Port Nolloth, Northern Cape. The 21 digit Surveyor General code for the property is C05300100000033500000. As part of the new lighthouse construction, an existing aluminium lattice lighthouse structure on the adjacent ERF 44 will be demolished as it has reached the end of its life span and needs to be replaced. The proposed new concrete lighthouse structure will be longer lasting and will more importantly serve as a better day-marker for mariners, and will direct them to the port safely. The existing lighthouse on ERF 44 was erected in 1979 and replaced an earlier cast iron structure commissioned in 1909.

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.

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

2.1 Compliance with EIA Legislation

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	Mitigation objectives and management actions columns in Sections 5 to 10.

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
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.	
(c) a detailed description of the aspects of the activity that are covered by the draft environmental management programme;	Section 1.1 (and Section 1 of the Draft BAR)
(d) an identification of the persons who will be responsible for the implementation of the measures contemplated in paragraph (b);	Section 4 and Monitoring-Responsibility column of the Sections 5 to 10.
(e) proposed mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon;	Monitoring-Methodology column of the Sections 5 to 10.
(f) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development, including, where appropriate, concurrent or progressive rehabilitation measures.	Section 5 to Section 10 of the Draft EMPr.
(g) a description of the manner in which it intends to - (i) modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) remedy the cause of pollution or degradation and migration of pollutants; (iii) comply with any prescribed environmental management standards or practices; (iv) comply with any applicable provisions of the Act regarding closure, where applicable; (v) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;	Section 5 to Section 10 of the Draft EMPr.
(h) time periods within which the measures contemplated in the environmental management programme must be implemented;	Monitoring-Frequency column of the Sections 5 to 10.
(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 of the Sections 5 to 10.
(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 10 of the Draft EMPr.
(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).

2.2 Content of the Draft EMPr

Each section of the Draft EMPr is divided into four phases of the project cycle:
(1) Design Phase;
(2) Construction Phase;
(3) Operational Phase; and
(4) Decommissioning Phase.

The Draft EMPr includes the findings and recommendations of the BA Process and Specialist Studies. However, the Draft EMPr is considered a live document and must be updated with additional information or actions during the design, construction and operational phases.

The 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;
- **Monitoring:** The key monitoring actions required to check whether the objectives are being achieved, taking into consideration methodology, frequency and responsibility.

The requirements of DEA for the environmental management programme are as follows:

DEA Requirements	Relevant Section in the EMPr
An environmental sensitivity map indicating environmental sensitive areas and features identified during the EIA process.	3
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.	N/A The site is fully transformed with no vegetation.
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.	N/A The site is fully transformed with no vegetation.
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.	N/A The site is fully transformed with no vegetation.
An open space management plan to be implemented prior to construction and operation of the facility.	N/A The site is fully transformed with no nearby

	areas designated as open space.
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.	5
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. 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.	6
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.	7
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.	8

2.3 Goal for Environmental Management

The overall goal for environmental management for the Transnet Freight Rail Port Nolloth Lighthouse 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 and flora;
- 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 the development in Port Nolloth.

3 DRAFT SITE LAYOUT AND SENSITIVITY MAP

The draft layout for the various components of the project is shown in Figure 1 below. Figure 2 shows the environmental sensitivities identified as part of the assessment. Full scale (A3) maps are included Appendix A of the Draft BAR.

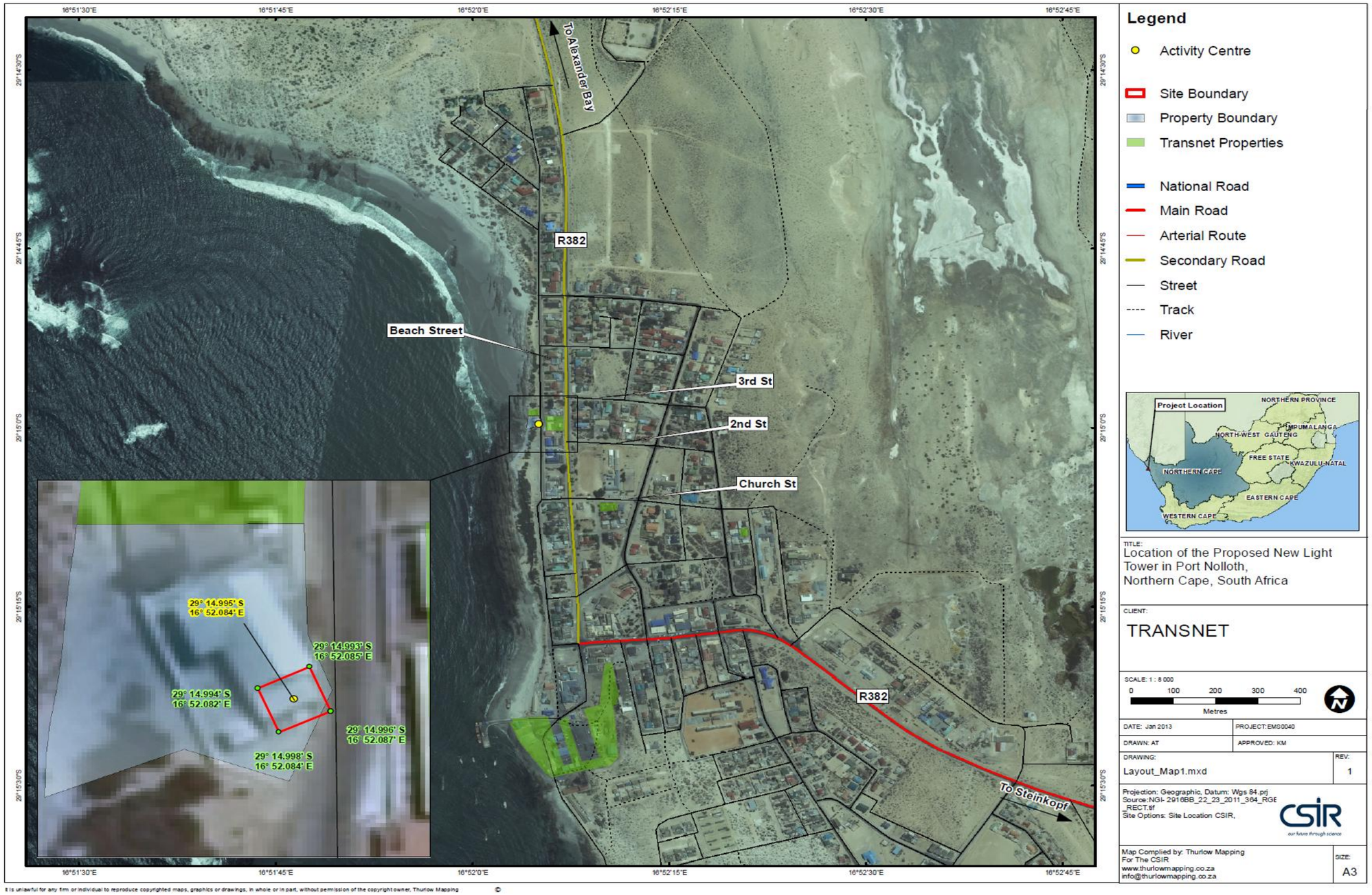

Figure 1 Draft layout for the Transnet Port Nolloth Lighthouse Project

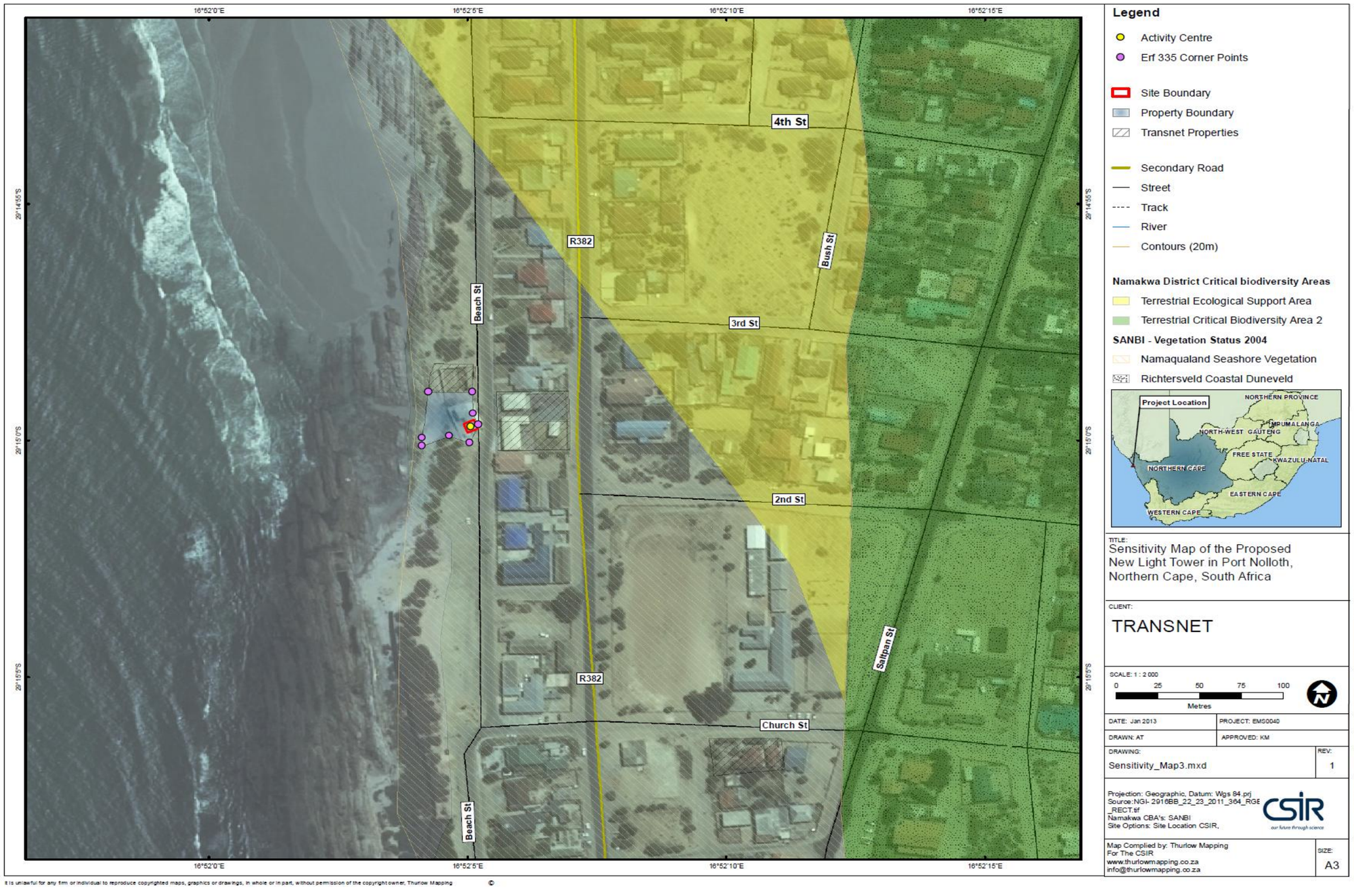

Figure 2 Environmental Sensitivity Map of the Development Site

4 ROLES AND RESPONSIBILITIES

For the purposes of the EMPr, the generic roles that need to be defined are those of the:

(1) Project Developer,
(2) Transnet's Environmental Officer,
(3) Environmental Control Officer (ECO),
(4) Lead Contractor; and
(5) Operations Manager.

Note: The specific titles for these functions will vary from project to project. The intent of this section is to give a generic outline of what these roles typically require.

4.1 Project Developer

The Project Developer (Transnet) is the 'owner' of the project and as such is responsible for ensuring that the conditions of the environmental authorization issued in terms of NEMA (should the project receive such authorization) are fully adhered to, as well as ensuring that any other necessary permits or licenses are obtained and complied with. It is expected that the Project Developer will appoint the ECO, the Construction Manager and the Operations Manager.

4.2 Transnet's Environmental Officer

Transnet's Environmental Officer is responsible for conducting the day-to-day tasks required to ensure that the Environmental Authorisation and EMPr, as well as any permits and licenses are correctly implemented on the construction site.

Note: Should the proposed project be granted environmental authorization from the National Department of Environmental Affairs, Transnet National Ports Authority (TNPA) will take over the implementation of the project from Transnet Freight Rail (TFR), who is the applicant. As such, the appointment of an Environmental Officer will be fulfilled by TNPA.

4.3 Environmental Control Officer

The Project Developer's Environmental Control Officer (ECO) will be responsible for updating the environmental management programme (EMPr) based on the final EMPr report. The Environmental Control Officer is also referred to as the Contractor's Environmental Officer. Responsibility of the ECO include overseeing the implementation of the EMPr during the construction and operations phases, and for monitoring environmental impacts, record-keeping and updating of the EMPr as and when necessary. As well as a responsibility for implementing the EMPr, the ECO is also responsible for monitoring compliance with the conditions of the Environmental Authorisation that may be issued to Transnet Limited.

During construction, the Project Developer's ECO will be responsible for the following:

- Meeting on site with the Construction Manager prior to the commencement of construction activities to confirm the construction procedure and designated activity zones;
- Weekly or bi-weekly (i.e. every two weeks) monitoring of site activities during construction to ensure adherence to the specifications contained in the EMPr, using a monitoring checklist that is to be prepared by the ECO at the start of the construction phase;
- Preparation of the monitoring report based on the weekly or bi-weekly site visit;

- Reporting of any non-conformances within 48 hours of identification of such non-conformance to the relevant agents; and
- Conducting an environmental inspection on completion of the construction period and 'signing off' the construction process with the Construction Manager.

During operation, the Project Developer's ECO will be responsible for:
- Overseeing the implementation of the EMPr for the operation phase;
- Ensure that the necessary environmental monitoring takes place as specified in the EMPr; and
- Update the EMPr and ensure that records are kept of all monitoring activities and results.

During decommissioning, the ECO will be responsible for:
- Overseeing the implementation of the EMPr for the decommissioning phase; and
- Conducting an environmental inspection on completion of decommissioning and 'signing off' the site rehabilitation process.

Note: Should the proposed project be granted environmental authorization from the National Department of Environmental Affairs, Transnet National Ports Authority (TNPA) will take over the implementation of the project from Transnet Freight Rail (TFR), who is the project applicant. As such, the appointment of an Environmental Control Officer will be fulfilled by TNPA.

4.4 Lead Contractor

The Lead Contractor will be responsible for the following:
- Overall construction programme, project delivery and quality control for the construction for the proposed lighthouse project;
- Overseeing compliance with the Health, Safety and Environmental Responsibilities specific to the project management related to project construction;
- Promoting total job safety and environmental awareness by employees, contractors and sub-contractors and stress to all employees and contractors and sub-contractors the importance that the project proponent attaches to safety and the environment;
- Ensuring that each subcontractor employ an ECO (or have a designated ECO function) to monitor and report on the daily activities on-site during the construction period;
- Ensuring that safe, environmentally acceptable working methods and practices are implemented and that sufficient plant and equipment is made available properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely;
- Meeting on site with the Project Developer's ECO prior to the commencement of construction activities to confirm the construction procedure and designated activity zones;
- Ensuring that all appointed contractors and sub-contractors are aware of this EMPr and their responsibilities in relation to the plan; and
- Ensuring that all appointed contractors and sub-contractors repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in the EMPr, to the satisfaction of the Project Developer's ECO.

At the time of preparing this draft EMPr, the Lead Contractor is still to be appointed by the proponent.

4.5 Operations Manager

The Operations Manager will be responsible for the following:
- Operation of the lighthouse facility;
- Required maintenance of the lighthouse facility; and

- Ensuring that the specified environmental monitoring programmes during operations are undertaken effectively and that the findings are analysed and applied.

5 TRAFFIC MANAGEMENT PLAN

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
a) CONSTRUCTION PHASE					
5.1. Increase in traffic volumes during construction (staff and materials).	Reduce the volume of trucks and private cars on roads during construction.	5.1.1. 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. A minibus transport service should be arranged for workers by the appointed contractor during construction. The contractor must check that the contracted minibus service is provided as per agreement.	Appointed inspectors must record arrival and departure times at designated pick-up points as well as number of workers using minibuses.	Once a week on a randomly selected day.	Appointed Contractor.
		5.1.2. 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 TNPA construction project manager should request contractors to arrange deliveries in larger vehicles where possible.	Construction monitoring staff to record number and size of vehicles making these deliveries to site.	Record daily and report effectiveness at weekly site meetings with contractors.	TNPA Construction Project Manager.
		5.1.3. Overloading of vehicles should be avoided to limit the impact on the structural capacity of	TNPA Health and Safety Officer to perform visual inspection of vehicles	Random visual inspection of vehicles weekly	TNPA Health and Safety Officer.

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
		the roads. TNPA Health and Safety Officer to monitor heavy vehicles for overloading during construction activities. Random visual inspection of vehicles to be undertaken during construction.	during construction.	by the TNPA Health and Safety Officer during the construction phase.	
5.2. Accelerated degradation of road structure due to construction traffic.	Reduce degradation of road structure during construction.	5.2.1. Overloading of vehicles should be avoided to limit the impact on the structural capacity of the roads. TNPA Health and Safety Officer to monitor heavy vehicles for overloading during construction activities. Random visual inspection of vehicles to be undertaken during construction.	TNPA Health and Safety Officer to perform visual inspection of vehicles during construction.	Random visual inspection of vehicles weekly by the TNPA Health and Safety Officer during the construction phase.	TNPA Health and Safety Officer.
5.3. Increased number of road accidents due to increased traffic during construction.	Reduce number of road accidents due to increased traffic during construction.	5.3.1. 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	TNPA 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 TNPA Health and Safety Officer during the construction phase.	TNPA Health and Safety Officer.

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
		not pose a safety risk. The Contractors must ensure that construction vehicles are roadworthy, properly serviced and maintained.			
b) OPERATIONAL PHASE					
5.4. Increased traffic volumes during servicing and repairs (staff).	Reduce the volume of private cars on the road network during operation.	5.4.1. The use of public transport to convey personnel to the site should be encouraged.	Engage with relevant parties to encourage the use of public transport during operations.	Prior to operational phase commences.	Project Developer (TNPA).
5.5. Increased risk of road accidents due to increased traffic during services and repairs.	Reduce incidents of road accidents due to increased operation/maintenance traffic flows.	5.5.1. 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 Lighthouse.	During operation, Transnet security staff to visually check roadworthiness (as part of protocol).	As part of protocol.	Transnet Security Staff.

6 STORM WATER MANAGEMENT PLAN (INCLUDING MEASURES TO PROTECT HYDROLOGICAL FEATURES)

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
a) DESIGN PHASE					
6.1. Impact of the project if a detailed Storm Water Management Plan is not correctly prepared.	To limit the effect of uncontrolled storm water run-off from developed areas onto natural areas.	6.1.1. Design and compile a Storm Water Management Plan.	Identify potential sources of pollution and design methods of keeping "clean" and "dirty" water separate.	During the design phase.	Project Developer (TNPA) and ECO.
b) CONSTRUCTION PHASE					
6.2. Impact of contaminated storm water discharge into the environment.	To prevent contaminated storm water from entering into and adversely impacting on surrounding ecosystems. To apply best practice principles in managing risks to storm water pollution.	6.2.1. A Storm Water Management Method Statement must be developed for the construction phase by each Contractor.	Compile a Storm Water Management Method Statement.	Prior to construction.	Contractor.
		6.2.2. Install silt fencing at the perimeters of actively disturbed areas (as needed).	Monitor activities and record and report non-compliance.	As needed during the construction phase.	TNPA Environmental Officer and ECO.
		6.2.3. Reinforce soil slopes to minimise erosion during rehabilitation (as needed, and once construction in a specific area has ceased).			
		6.2.4. Divert storm water runoff from uncovered bulk construction waste piles to suitable collection systems.			

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
		6.2.5. Perform periodic inspections and maintenance of soil erosion measures and storm water control structures.			
6.3. Impact of changes to groundwater quality.	To reduce the impact of construction activities on groundwater quality.	6.3.1. Fuels used for construction 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.	TNPA Environmental Officer and Contractor.
		6.3.2. All stockpiles must be protected from erosion and stored on flat areas where run-off will be minimised.			
c) OPERATIONAL PHASE					
6.4. Stormwater discharge into the environment during operations.	To protect soil resources and prevent soil erosion.	6.4.1. Install and maintain litter traps.	Monitor activities and record and report non-compliance.	On-going.	Project Developer (TNPA).
		6.4.2. As far as reasonably possible, capture and contain "dirty" stormwater for appropriate disposal/discharge.			
6.5. Impact of changes to groundwater quality.	To reduce the impact of changes on groundwater quality.	6.5.1. Erosion and sedimentation into the surrounding environment must be minimised through effective stabilisation (such as silt traps).	Monitor activities and record and report non-compliance.	As needed during the operation phase.	TNPA Environmental Officer/ Environmental Manager.
d) DECOMMISSIONING PHASE					
6.6. Contaminated stormwater discharge to	To prevent the contamination of stormwater by	6.6.1. Implement Management Actions as stipulated for the construction phase.	ECO must monitor activities and record and report non-compliance.	On-going	TNPA Environmental Officer/

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
environment	uncontrolled release of contaminated water.				Environmental Manager, Contractor and ECO

7 EROSION MANAGEMENT PLAN

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	Frequency	Responsibility
a) CONSTRUCTION PHASE					
7.1. Increased wind erosion and resultant deposition of dust.	Prevent wind erosion and resultant deposition of dust on the surrounding indigenous vegetation.	7.1.1. 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/ TNPA Environmental Officer
b) OPERATIONAL PHASE					
7.2. Loss of natural vegetation in development footprint area and resulting impacts on species of special concern.	Prevent loss of natural vegetation through erosion.	7.2.1. The use of silt fences (or 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 evaluated and maintained.	Monitor efficiency of erosion control measures.	Weekly or monthly	TNPA Environmental Officer
c) DECOMMISSIONING PHASE					
7.3. 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. 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).					

8 INITIAL HAZARDOUS SUBSTANCES LEAKAGE OR SPILLAGE MONITORING SYSTEM

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
a) CONSTRUCTION PHASE					
8.1. 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.	8.1.1. 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 as instructed.	Daily.	TNPA Environmental Officer and Contractor.
		8.1.2. Monitor construction equipment and machinery daily to ensure that no fuel spillage takes place.			
		8.1.3. Spilled fuel, oil or grease must be retrieved where possible, and the contaminated soil removed, cleaned and replaced.			
		8.1.4. Contaminated soil must be collected by the Contractor (under observation of TNPA Environmental Officer) and disposed of at a registered waste facility designated for this purpose.			
		8.1.5. Spilled fuel, oil or grease must be retrieved where possible, and the contaminated soil removed, cleaned and replaced.			
		8.1.6. Portable bioremediation kit (to remedy chemical spills) must be kept on site and used as required.			

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
b) OPERATIONAL PHASE					
8.2. Impacts due to 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.	8.2.1. All operation waste to be removed from the site. 8.2.2. All liquid waste or spills (used oil, paints, lubricating compounds and grease from maintenance vehicles) to be packaged and disposed appropriately at a registered landfill site. 8.2.3. Adequate containers for the cleaning of equipment and materials (paint, solvent) must be provided in order to avoid spillages.	Waste removal and disposal to be monitored throughout operation.	Monthly	TNPA Environmental Officer
c) DECOMMISSIONING PHASE					
8.3. 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.					

9 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					
9.1. Impact on archaeological heritage as a result of demolishing the existing lean-to structure and archaeological/palaeontological finds during excavations.	Prevent the damage of materials of heritage significance.	9.1.1. No specific mitigation actions can be applied for removal of the lean-to structure. Although this structure is of low heritage significance, a permit must be obtained from SAHRA NC prior to demolishing the structure as it is older than 60 years.	Monitor site during excavations.	Once off during excavations	TNPA Environmental Officer and ECO
		9.1.2. All major bedrock excavations should be examined at regular intervals for fossil material by the Environmental Control Officer during the construction phase. In addition, Any palaeontological/ archaeological heritage uncovered during the construction must result in stopping construction activities and immediately reporting the findings to the SAHRA APM Unit (Katie Smuts/Colette Scheermeyer 021 462 4502).			
9.2. Visual impacts during the construction phase. Construction activities (and equipment and vehicles) will be visible by users of Beach Road.	Reduce visual impacts during the construction phase.	9.2.1. Project developers should demarcate construction boundaries to minimise areas of surface disturbance.	Monitor activities and record and report non-	Weekly	TNPA Environmental Officer and ECO
		9.2.2. The contractor should maintain good			

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
		housekeeping on site to avoid litter and minimise waste.	compliance.		
		9.2.3. Rehabilitation of temporarily cleaned areas should start as soon as possible.			
		9.2.4. Control measures such as mulch should be spread over soil disturbances to aid rehabilitation and dust suppression.			
		9.2.5. Night lighting of the construction site should be minimised within the requirements of safety and efficiency.			
9.3. Air Quality Impact: Generation of dust as a result of site clearing and earthworks.	Reduce the generation of dust during construction.	9.3.1. Vehicles must only be permitted in demarcated areas or on existing roads.	Monitor activities and record and report non-compliance.	Monthly	ECO and TNPA Environmental Officer
		9.3.2. It is recommended that water be sprayed on access roads.			
		9.3.3. There should be strict speed limits on access roads with dusty surfaces in order to prevent dust liberation into the atmosphere.			
9.4. Generation of noise as a result of construction activities and the use of diesel powered equipment and machinery (required for earthworks, compacting etc.), as well as construction vehicles.	Reduce noise impacts during construction.	9.4.1. All construction activities should be undertaken in accordance with daylight working hours between 07:00 and 17:00 on weekdays and 07:30 and 13:00 on Saturdays, with no construction activities taking place on Sundays and public holidays.	Monitor activities and record and report non-compliance.	Monthly	TNPA Environmental Officer
		9.4.2. All earth-moving vehicles and equipment must be serviced regularly to ensure proper functioning.			

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
		9.4.3. A complaints register must be made available so that any complaints can be logged and reported to the responsible person on site			
		9.4.4. Operations should meet the noise standard requirements of the Occupational Health and Safety Act (Act No 85 of 1993).			
9.5. Possible soil contamination during site clearing activities through diesel, petrol and contaminant spills from construction vehicles/equipment.	Prevent environmental impacts as a result of the hazardous waste spills.	9.5.1. Ensure vehicles are serviced regularly and are in good working condition.	Monitor activities and record and report non-compliance.	Monthly	TNPA Environmental Officer
		9.5.2. Implement good housekeeping including containment and immediate clean-up of any spillages, collection of chemical/oil wastes, and disposal at an appropriate hazardous waste facility.			
		9.5.3. Prevent, minimize, and control of the spills of hazardous waste by: ○ Providing adequate secondary containment for fuel storage and for the temporary storage of other fluids (e.g. lubricating oils, hydraulic fluids). ○ Using impervious surfaces for refuelling areas and other fluid transfer areas. ○ Training workers on the correct transfer and handling of fuels and chemicals and the response to spills. ○ Providing portable spill containment and clean-up			

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
		equipment on site and training in the equipment deployment.			
9.6. Generation of construction solid waste through construction activities and demolitions of the lean-to and existing aluminium lattice lighthouse.	Prevent environmental impacts as a result of the incorrect collection, handling and disposal of solid waste.	9.6.1. General waste bins must be made available for employees to use throughout the project site. General waste must be disposed off at an approved waste disposal facility and evidence of correct disposal must be kept.	Monitor activities and record and report non-compliance.	Weekly	TNPA Environmental Officer
		9.6.2. Building rubble and metal waste must be used, where possible, in construction – if this is not possible the rubble and metal waste must be disposed off at an appropriate site. All temporary soil stockpiles, litter and building waste must be removed on completion of construction activities without dumping in surrounding open areas.			
		9.6.3. The corrugated asbestos roof sheeting from the lean-to structure must be removed and disposed off in accordance with Section 21 of the Asbestos Regulations, 2001 (under the Occupational Health and Safety Act, 1993). Records of all waste being taken off site must be recorded and kept as evidence.			
		9.6.4. Contractors must be responsible for the maintenance of sewage waste from on site chemical toilets. Should any spills occur, the material must be			

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
		cleaned up immediately and disposed off appropriately. Chemical toilets on site during the construction activities must be cleaned and maintained on a weekly basis to minimise the potential of odours on site.			
9.7. Road damage through excavations for the 220 V underground cable and construction vehicle movement.	Prevent road damage through excavations/vehicle movement	9.7.1. Construction vehicles must follow strict speed limits on all access roads (40 km/hr in residential areas). 9.7.2. The contractor/proponent must ensure the repair of any damaged roads caused by the movement of construction vehicles or excavation activities.	Monitor activities and record and report non-compliance.	Weekly	TNPA Environmental Officer
9.8. Runoff and erosion: Increased runoff and erosion from site clearing, excavations for the lighthouse foundation and cabling to the engine room. The spatial extent of the exposed soil surface will be minimal owing to the limited development footprint. Includes erosion of soil stockpiles.	Minimise runoff and erosion during construction activities.	9.8.1. Keep exposed soil surfaces covered with mulch, straw, erosion control mats or any other means until plant cover is established or the surface covered by artificial means (e.g. concrete/tarring) as applicable. 9.8.2. Implement the stormwater management plan (Appendix G – Table 6). 9.8.3. Erosion damage to soil stockpiles must be prevented with soil conservation measures such as plastic sheeting, tarpaulins if applicable.	Monitor activities and record and report non-compliance.	Weekly	TNPA Environmental Officer

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
b) OPERATION PHASE					
9.9. Visual impacts of the concrete tower to sensitive receptors.	Reduce visual impacts during the operational phase.	9.9.1. Project developer should maintain the lighthouse exterior which will subsequently allow for an improved sense of place for Port Nolloth in general.	Monitor activities and record and report non-compliance.	Once-off prior to lighthouse operations	TNPA Environmental Officer and Contractor
c) DECOMMISSIONING PHASE					
9.10. Generation of solid waste through decommissioning activities.	Prevent environmental impacts as a result of the incorrect disposal of solid waste.	9.10.1. General waste bins must be made available for employees to use throughout the project site. General waste must be disposed off at an approved waste disposal facility and evidence of correct disposal must be kept.	Monitor activities and record and report non-compliance.	Weekly	TNPA Environmental Officer
		9.10.2. Building rubble must be reused, where possible – if this is not possible the rubble must be disposed off at an appropriate site. All temporary soil stockpiles, litter and rubble must be removed on completion of decommissioning activities without dumping in surrounding open areas.			
		9.10.3. Any hazardous waste must be removed and disposed off in a registered landfill site and the activities must be undertaken by an accredited services provider. Records of all waste being taken off site must be recorded and kept as evidence.			

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
		9.10.4. Contractors must be responsible for the maintenance of sewage waste from on site chemical toilets. Should any spills occur, the material must be cleaned up immediately and disposed off appropriately. Chemical toilets on site during the decommissioning activities must be cleaned and maintained on a weekly basis to minimise the potential of odours on site.			
9.11. Generation of noise as a result of decommissioning activities and the use of diesel powered equipment and machinery (required for earthworks, compacting etc.), as well as construction vehicles.	Reduce noise impacts during decommissioning.	9.11.1. All decommissioning activities should be undertaken in accordance with daylight working hours between 07:00 and 17:00 on weekdays and 07:30 and 13:00 on Saturdays, with no activities taking place on Sundays and public holidays.	Monitor activities and record and report non-compliance.	Monthly	TNPA Environmental Officer
		9.11.2. All earth-moving vehicles and equipment must be serviced regularly to ensure proper functioning.			
		9.11.3. Operations should meet the noise standard requirements of the Occupational Health and Safety Act (Act No 85 of 1993).			
9.12. Air Quality Impact: Generation of dust as a result of decommissioning activities.	Reduce the generation of dust during decommissioning.	9.12.1. Vehicles must only be permitted in demarcated areas or on existing roads.	Monitor activities and record and report non-	Monthly	ECO and TNPA Environmental Officer
		9.12.2. It is recommended that water be sprayed on access roads.			

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
		9.12.3. There should be strict speed limits on access roads with dusty surfaces in order to prevent dust liberation into the atmosphere.	compliance.		
9.13. Possible soil contamination during decommissioning activities through diesel, petrol and contaminant spills from construction vehicles/equipment.	Prevent environmental impacts as a result of the hazardous waste spills.	9.13.1. Ensure vehicles are serviced regularly and are in good working condition.	Monitor activities and record and report non-compliance.	Monthly	TNPA Environmental Officer
		9.13.2. Implement good housekeeping including containment and immediate clean-up of any spillages, collection of chemical/oil wastes, and disposal at an appropriate hazardous waste facility.			
		9.13.3. Prevent, minimize, and control of the spills of hazardous waste by: • Providing adequate secondary containment for fuel storage and for the temporary storage of other fluids (e.g. lubricating oils, hydraulic fluids). • Using impervious surfaces for refuelling areas and other fluid transfer areas. • 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.			

10 ENVIRONMENTAL AWARENESS PLAN

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
a) DESIGN PHASE					
10.1 Potential impacts resulting from 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).	10.1.1. Audit the implementation of the EMPr requirements. 10.1.2. 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.	ECO, Project Developer (TNPA), and Safety, Health and Environment Representative.
b) CONSTRUCTION PHASE					
10.2. 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.	10.2.1. Designate smoking areas where the fire hazard could be regarded as insignificant.	Adhoc checks to ensure workers are smoking only in designated areas.	Daily.	Contractor, TNPA Environmental Officer/ECO.
		10.2.2. Educate workers on the dangers of open and/or unattended fires.	Ensure fire safety requirements are well understood and respected by workers.	On-going.	
		10.2.3. 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.			
		10.2.4. Fire-fighting equipment must be made available at			

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
		various appropriate locations on the construction site.			
10.3. 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.	10.3.1. All litter must 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.	TNPA Environmental Officer/ Environmental Manager
		10.3.2. No person other than a qualified specialist or personnel authorised by TNPA, will disturb or remove plants outside the demarcated construction area.			
		10.3.3. No person other than a qualified specialist or personnel authorised by TNPA, will disturb animals on the site.			
		10.3.4. 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 and ensure that all new staff is inducted.	TNPA Environmental Officer/ Environmental Manager.

Impact	Mitigation Objectives	Management Actions	Monitoring		
			Methodology	*Frequency*	*Responsibility*
c) OPERATIONAL PHASE					
10.4. 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.	10.4.1. Designate smoking areas where the fire hazard could be regarded as insignificant.	Adhoc checks to ensure workers are smoking only in designated areas.	Monthly.	TNPA Environmental Officer/Environmental Manager.
		10.4.2. Educate workers on the dangers of open and/or unattended fires.			
		10.4.3. Ensure that adequate fire-fighting equipment is available and easily accessible on site.	Maintenance of fire-fighting equipment.	Yearly.	
10.5. Excessive generation of waste on site during operation phase.	Minimise the production of general waste.	10.5.1. Promote waste reduction, re-use, and recycling opportunities on site during the operation phase.	Monitor waste generation and collection throughout operation.	Monthly.	TNPA Environmental Officer/ Environmental Manager.
		10.5.2. Ensure an adequate and sustainable use of resources			
10.6. Non respect of waste management practices.	Ensure compliance with waste management legislation. Minimise pollution of the environment.	10.6.1. Control and implement waste management plans. Ensure that relevant legislative requirements are respected and adhered to.	Control of waste management practices throughout operation phase.	Monthly.	TNPA Environmental Officer/ Environmental Manager.
		10.6.2. Determine specific areas on site for temporary management of waste.			