








IN ASSOCIATION WITH INKANYEZI YETHU



**MARCH 2019**  
**ENVIRONMENTAL MANAGEMENT PROGRAMME**  
**RELOCATION OF THE RICHARDS BAY LIGHTHOUSE**  
**UMHLATHUZE LOCAL MUNICIPALITY**  
**TRANSNET NATIONAL PORTS AUTHORITY**  
**EIA REF NO: 14/12/16/3/3/1/2007**



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## Table of Acronyms

APP	Applicant
BAR	Basic Assessment Report
C&R	Comments and Response
CBA	Critically Biodiversity Area
CON	Contractor
CR	Critically Endangered
DWS	Department of Water and Sanitation
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ENG	Engineer
I&AP	Interested and Affected Parties
IDP	Integrated Development Plan
NEMA	National Environmental Management Act



## SECTION 1 INTRODUCTION, PROJECT AND SITE DESCRIPTION

### 1.1. Background

Transnet National Ports Authority propose to relocate the existing Richards Bay lighthouse within Ward 1 of the uMhlatuze Local Municipality, King Cetshwayo District Municipality, KwaZulu-Natal Province. The site is located in the north eastern undeveloped coastal area of the Meerensee neighbourhood, Richards Bay at the following point location, 28°46'15.21"S 32° 7'49.59"E.

### 1.2. Scope of Work

Prepare an EMPr for the Relocation of the Richards Bay Lighthouse in order to manage and mitigate potential environmental impacts during construction. The provisions of this EMPr are binding on the contractor throughout the life of the contract.

### 1.3. General Principles and Purpose of This EMPr

The purpose of this EMPr is to provide guidance to all contractors and site workers on how to operate in a responsible manner to achieve these goals and ensure that the requirements of the legislation are met. This EMPr is a working document to be used during construction and has been generated to ensure that:

- There is protection of the environment during the construction period.
- All emissions to air, water and soil are controlled and managed to mitigate their impacts on the environment and surrounding communities.
- Nuisance factors associated with construction are controlled as far as is reasonably possible.
- The correct principles are followed from the very beginning during site set up thereby reducing frustrations on the part of the contractor when asked to comply with the strictures of the EMPr and relevant environmental legislation.
- The post construction clean-up is carried out correctly so as to avoid environmental impacts and meet the legislated requirements.

This EMPr may be subject to change as brought about by variations in the project specification however any changes must be approved by the relevant authorities as per Chapter 5 of the EIA Regulations, December 2014 as amended.

### 1.4. Responsibilities

The Project Applicant (Transnet National Ports Authority) is responsible for:

- Ensuring that the engineer and contractors comply with the approved EMPr.
- Ensuring compliance with the provisions for duty of care and remediation of damage in accordance with section 28 of the National Environmental Management Act (NEMA), (No. 107 of 1998) and its obligations regarding the control of emergency incidents in terms of Section 30 of NEMA.
- Notifying the relevant authorities (DEA) of any incident as defined in subsection 30(1)(a) of NEMA.
- Ensuring that the mitigation measures to address environmental impacts identified are carried out by the contractor.

The Project Manager or Engineer is responsible for:

- Appointing the appropriately qualified contractor and ensuring that they have read and understood the EMPr.

- Ensuring all work undertaken is in accordance with the EMPr.
- Ensuring adherence to safety, health and environment (SHE) standards and ensuring the construction activities comply with the EMPr.
- Arranging for the site to be monitored on a daily basis to ensure compliance with the EMPr.
- Overall responsibility and accountability for the site during the construction phase.
- Mitigating impact on the environment through responsible operation and adherence to the EMPr.
- Ensuring transparency in their operation and environmental management of the site.
- Managing the contractor to ensure that they adhere to the EMPr and ensuring that all necessary documentation is maintained on site.
- Ensuring that the contractor has a copy of the EMPr and Method Statements.

The Site Contractor(s) is/are responsible for:

- Providing a suitable person to operate as Environmental Officer (EO) or Safety Health Environment (SHE) officer to undertake the monitoring of the day to day requirements of the EMPr.
- Operating in accordance with the EMPr and carrying out construction activities with due care and diligence.
- Ensuring that any communications from stakeholders are reported to the Environmental Control Officer (ECO).
- Maintaining relevant documentation for review by the ECO.
- Undertaking the mitigation measures to address environmental impacts identified.

The Environmental Officer (EO) or designated Safety Health Environment (SHE) officer is responsible for:

- Daily compliance monitoring of construction against the requirements set out in this EMPr, and the environmental authorization.
- Undertaking the mitigation measures to address environmental impacts identified.
- Ensuring that all site staff are adequately trained in environmental matters.
- Liaising with site staff and IAPs through the Community Liaison Officer (CLO), if required.
- Must be conversant with the applicable legislation pertaining to the environment.
- Liaise directly with the ECO on the monthly audit findings.
- Identification of possible areas of improvement during construction.
- Monitoring the construction site on a regular basis and recording key findings.
- Advising the Project Manager and the contractors on environmental matters.
- Provide appropriate recommendations to address and rectify these matters.
- Monitoring implementation of the EMPr by the contractor.
- Work hand in hand with the health and safety officer.
- Maintain records pertinent to the requirements of the EMPr.

The Environmental Control Officer (ECO or Independent environment practitioner) is responsible for:

- Conducting regular auditing against the requirements of the EMPr and Environmental Authorization.
- Liaising directly with the DEA and supplying them with copies of the audit reports.
- Liaising directly with the contractor and EO and supplying them with a copy of the audit reports.

### 1.5. Monitoring

The key to a successful EMPr is effective monitoring and review to ensure effective functioning of the EMPr and to identify and implement corrective measures in a timely manner. The EO must be responsible for day-to-day monitoring and reporting while the ECO must undertake to monitor the site on a monthly basis. The day-to-day monitoring must be conducted by the EO in conjunction with the contractor and the engineer. The monthly audit report by the ECO can then be used to provide external monitoring and reporting to DEA Compliance and Enforcement. Paramount to the reporting of non-conformances or incidents is that corrective and preventive action plans are developed and adhered to. Photographic records of all incidents and/ or non-conformances must be retained. Non-compliances identified by the ECO must be resolved within fourteen days of being noted, incidents that are deemed by the ECO to have a large environmental impact must be resolved immediately.

### 1.6. Applicable Legislation

The site engineer must be aware of any compliance issues raised by the EO and ECO and must ensure that the necessary corrective measures are implemented. As per the National Environmental Management Act No 107 of 1998 (Section 28), offending parties may be held financially accountable for any pollution or environmental damage.

The following environmental legislation must be adhered to:

- Constitution of South Africa (Act No. 108 of 1996)
- National Environmental Management Act (Act No 107 of 1998) – NEMA
- Environment Conservation Act (Act No 73 of 1989)
- National Heritage Resources Act (Act No 25 of 1999)
- National Water Act (Act No 36 of 1998)
- Hazardous Substances Act (Act No. 15 of 1973)
- National Environmental Management: Biodiversity Act (Act No. 10 of 2004)
- Occupational Health and Safety Act (Act No 85 of 1993)
- National Environmental Management: Waste Management Act (Act No. 59 of 2008)
- National Building Regulations and Building Standards Act 103 of 1977
- National Environmental Management Air Quality Act (Act No. 39 of 2004)
- Relevant local bylaws

This EMPr meets the requirements of the stipulations provided in Appendix 4 of NEMA, 1998 (Act No. 107 of 1998) Environmental Impact Assessment Regulations, 2014 with regards to the content of EMPr. This EMPr has been developed to specifically address the impacts related to this project in each phase of development.

### 1.7. Layout of the EMPr

The EMPr is divided into five sections dealing with an Introduction and description of the proposal and the site, Pre-Construction and Site Set Up, Construction Activities and Post Construction, Rehabilitation and Operation Activities. Sections 4 and 5 provide definitions and records that can be used to record training, incidents, and complaints. Under the construction section, each section deals with a specific aspect of the development i.e. administration and records. Within these sections, the specific activity is described and the mitigation action required is provided. The tables have been set up to enable ease of auditing with a section for the EO/SHE officer or ECO to state whether mitigation measures have been put in place and to make comment about any problems noted.

### 1.8. Project Description

Transnet National Ports Authority propose to relocate the existing Richards Bay lighthouse within Ward 1 of the uMhlathuze Local Municipality, King Cetshwayo District Municipality, Kwazulu-Natal Province. The site is located in the north eastern undeveloped coastal area of the Meerensee neighbourhood, Richards Bay at the following point location, 28°46'15.21"S 32° 7'49.59"E. The site is located on Erf 5333 Richards Bay however the proposed site is in the process of being subdivided as the property is owned by the uMhlathuze Local Municipality. This portion measures a total of 1529m<sup>2</sup>. The site is located in the north eastern undeveloped coastal area of the Meerensee neighbourhood, Richards Bay. The current zoning as per the City of Umhlathuze Zoning Scheme is Municipal Health and Government 2. This zone is intended for buildings erected and used for National, Provincial and Municipal administration and services. Current access to the site is off a dirt road connected to Anglers Road located on its north eastern boundary.

The old Richards Bay lighthouse, 500m south west of the proposed development (28°46'31.82"S 32° 7'40.55"E), was commissioned on 22 May 1979 to provide Aid to Navigation (Aton) to maritime travellers/shipping operations in around and around the KZN North Coast. It was a 11-meter square concrete tower with cylindrical top section, painted white, with white lantern house. This lighthouse was subject to large scale land-slip due to coastal erosion whereby there was a real danger that the structure would fall down the embankment onto the beach with further erosion. Due to this eminent danger of collapse the old lighthouse was demolished. As a short-term solution Transnet National Ports Authority has erected a temporary lattice lighthouse at the most landward side of the old site. However, in order to provide a long-term permanent structure to serve as an Aton was proposed. Please note the project to construct a new lighthouse was previously authorised (14/12/16/3/3/1/662) in August 2013 however the project was deferred by Transnet National Ports Authority due to cost reductions and this resulted in the EA lapsing. This EIA serves to re-authorise the construction of the lighthouse at the new site.

The specifications of the proposed lighthouse are as follows:

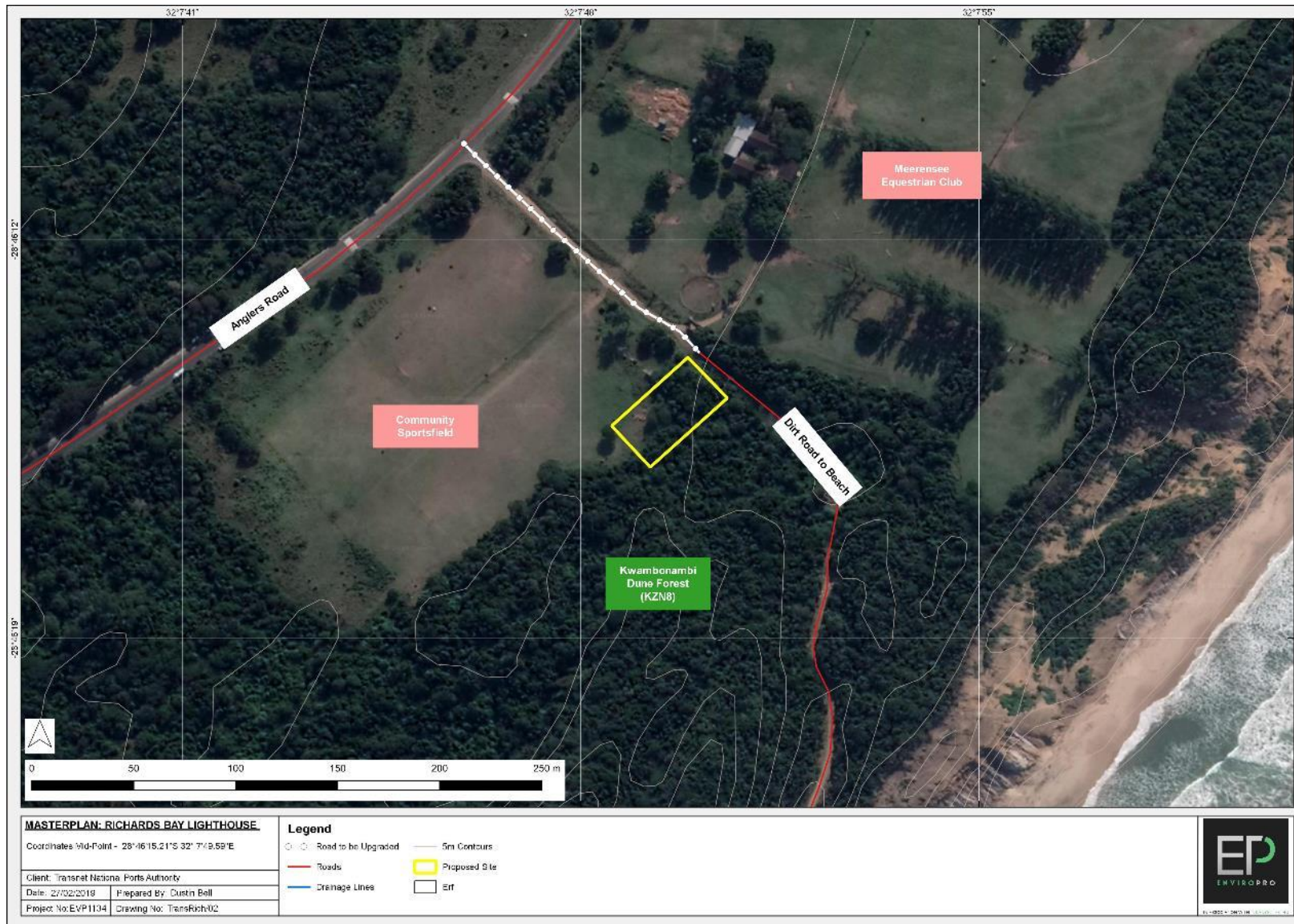
- The site will comprise of a 30m x 50m enclosed area measuring a total of 1529m<sup>2</sup>.
- The lighthouse be a 27,99m high monopole.
- The monopole will be supported by strip concrete foundation as per the geotechnical report.
- The long-range beacon attached to the lighthouse will be powered solar with municipal supply as back-up. The beacon will be mounted high up on a landing. There will a source of fresh water
- There will be no other facilities on site such as ablutions and meeting facilities.
- The project will also include the upgrading of existing 200m gravel road to a 4m wide road. This road will intersect the Anglers Road running near the site.
- All stormwater from the site will be directed into the stormwater channels along the new upgraded portion of road. Stormwater channels will connect into the exiting stormwater system of Anglers Road.



The land use surrounding the project area include horse stables, sports fields and a dirt road heading towards the beach. The entire site has been classified as a critically endangered ecosystem type listed in terms of section 52 of the NEMBA, namely Kwambonambi Dune Forest. The entire site will be cleared to allow for the construction of the lighthouse and such a total area of 1529m<sup>2</sup> will be cleared within this ecosystem type. Therefore, an environmental authorisation is required prior to construction commencing on site. Please note as forest will be impacted on the Department of Agriculture, Forestry and Fisheries has been contacted whereby it will be determined by official from this Department if a permit is required to remove forest vegetation.

As per Section 78 of the National Ports Act (Act 12 of 2005), The Authority (Transnet National Ports Authority) must operate and maintain lighthouses and other navigational aids under its control in terms of standards determined by the South African Maritime Safety Authority in order to assist the navigation of vessels within port limits and along the coast of the Republic. Therefore, Transnet National Ports Authority is responsible for the provision, operation and maintenance of a lighthouse to service the Richards Bay port. Therefore, the construction of the new lighthouse will have a positive impact on local maritime navigation which is a legislated requirement.

Figure 1: Aerial photograph showing an overview of the Richards Bay Lighthouse.



**1.9. Table of Responsibilities**

This is to state that the undersigned have received a copy of the Environmental Management Plan (EMPr) developed for this site by *EnviroPro* dated March 2019. Any contravention of the EMPr must be recorded and corrective action must be carried out. Any changes to the EMPr must be approved by the *Environmental Control Officer (ECO)*, the consultant *EnviroPro* and the relevant authority. Such changes are to be made in writing and a record must be maintained.

The undersigned do hereby agree to abide by the structures of the Environmental Management Plan (EMPr) and accept responsibility for ensuring adherence to the Construction EMPr as it relates to the following areas:

Table of Responsibilities				
Job description / title	Scope of work or area of responsibility i.e. camp drainage, construction camp, housekeeping etc.	Responsible person (Name)	Signature	Date

**1.10. Names and Telephone Numbers of Contact Persons**

The following list of contacts must be printed and made clearly visible on the site.

Contact List			
Designation	Organisation	Name	Contact number
Applicant	Transnet National Ports Authority	Cebile Nzuzza	031 361 3855
Project Manager	Transnet National Ports Authority	Yolande Rasmeni	021 449 5506
Consulting Engineer			
Independent Environmental Practitioner	EnviroPro	Josette Oberholzer Iain Jourdan	031 765 2942
Environmental Control Officer (ECO)			
Environmental Authority (Enforcement & Compliance)	DEA	Compliance Officer	
Reporting for Incidents involving Watercourses	DWS		
Wildlife Related Incident	Ezemvelo KZN Wildlife	Dominic Wieners	033 845 1455
Heritage Resources	AMAFA	Weziwe Tchabalala	033 394 6543
Fire Emergency	Fire Department	-	0800 033911
Crime Emergency	Police	-	10111



**SECTION 2 SITE SPECIFIC IMPACTS AND MITIGATIONS AS IDENTIFIED IN THE BAR**



**Figure 2:** (a) View of the site looking from the access road; (b) View of area associated with the sportsfield looking towards the forest; (c) View of the existing gravel road to be upgraded with the site on the left.

Nature and Consequences of impact	Proposed mitigation and Extent to which impact can be reversed / avoided, managed or mitigated:	Person	In place (Yes / No)	Comments
<p>The habitat for fauna living within the construction footprint will be lost due to the clearance of the site for the construction of the Richards Bay Lighthouse.</p>	<p>The following measures must be carried out to mitigate against excessive habitat destruction:</p> <ul style="list-style-type: none"> <li>• No more than two weeks in advance of vegetation clearance that will commence during the breeding season (1 September – 1 March).</li> <li>• A qualified ECO with a Zoologist background must conduct a pre-construction survey of all potential special-status bird nesting habitat in the vicinity of the project area, and on the project areas.</li> <li>• If active nests are found, avoidance procedures must be implemented on a case-by-case basis. Avoidance procedures may include the implementation of buffer zones, relocation of birds,</li> </ul>	<p>CON/APP</p>		



Nature and Consequences of impact	Proposed mitigation and Extent to which impact can be reversed / avoided, managed or mitigated:	Person	In place (Yes / No)	Comments
	<p>or seasonal avoidance. If buffers are created, a no disturbance zone must be created around active nests during the breeding season by a suitably qualified ECO</p> <ul style="list-style-type: none"> <li>• If any faunal species are recorded during construction, an appropriate specialist should be consulted to identify the correct course of action. These species must either be moved from the area or allowed time to move off;</li> <li>• During vegetation clearance, methods should be employed to minimize potential harm to fauna species. Clearing has to take place in a phased and slow manner, commencing from the interior of the site progressing outwards towards the boundary to maximize potential for mobile species to move to adjacent areas;</li> <li>• Prior and during vegetation clearance any larger fauna species noted should be given the opportunity to move away from the construction machinery;</li> <li>• Fauna species such as frogs and reptiles that have not moved away should be carefully and safely removed to a suitable location beyond the extent of the development footprint by a suitably qualified ECO trained in the handling and relocation of animals;</li> <li>• Fencing must be erected around the decided project area to prevent workers and members of the public from entering the surrounding areas. This fence should have small openings to allow wildlife to pass through;</li> <li>• The entire site and access roads must be secured, and all efforts must be made to prevent illegal access to the areas, especially the coastal forest;</li> </ul>			

Nature and Consequences of impact	Proposed mitigation and Extent to which impact can be reversed / avoided, managed or mitigated:	Person	In place (Yes / No)	Comments
	<ul style="list-style-type: none"> <li>• Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site;</li> <li>• No trapping, killing or poisoning of any wildlife is to be allowed on site;</li> <li>• During the construction phase noise must be kept to a minimum to reduce the impact of the development on the fauna residing on the site;</li> <li>• Staff must be educated about the sensitivity of faunal species and measures should be put in place to deal with any species that are encountered during the construction process;</li> <li>• Construction activities and vehicles could cause spillages of lubricants, fuels and construction material which could then be transported to the surrounding areas, impacting the functioning of the systems. All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the wetland and buffer areas; and</li> <li>• The intentional killing of any animals including snakes, insects, lizards, birds or other animals must be strictly prohibited.</li> </ul>			
Vegetation within the Kwambonambi Dune Forest vegetation type will be lost due to the clearance of the site for the construction of the Richards Bay Lighthouse.	<p>The following measures must be carried out to mitigate against excessive Vegetation clearing:</p> <ul style="list-style-type: none"> <li>• As far as possible, the proposed developments must be placed in areas that have already been disturbed. Areas to be developed must be specifically demarcated so that during the construction phase, only the demarcated areas be impacted upon (including fencing off the defined project area);</li> </ul>	CON/APP		

Nature and Consequences of impact	Proposed mitigation and Extent to which impact can be reversed / avoided, managed or mitigated:	Person	In place (Yes / No)	Comments
	<ul style="list-style-type: none"> <li>• Areas of indigenous vegetation, even secondary communities must under no circumstances be fragmented or disturbed further or used as an area for dumping of waste;</li> <li>• Coastal forest areas outside the footprint must be declared as 'no-go' areas during the construction and operational phases and all efforts must be made to prevent access to this area from construction workers, machinery and the general public;</li> <li>• Where possible, existing access routes and walking paths must be made use of for vehicles and machinery, and new routes limited;</li> <li>• All laydown, storage areas etc should be restricted to within transformed areas and all access roads must be kept within this area or from existing access roads;</li> <li>• A qualified environmental control officer must be on site when construction begins to identify species that will be directly disturbed and to relocate fauna/flora that is found during construction (including all reptiles and amphibians);</li> <li>• Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species; and</li> <li>• Compilation of and implementation of an alien vegetation management plan for the entire site.</li> </ul>			
Removal of alien invasive vegetation found within the Richards Bay Lighthouse construction site.	This is a positive impact.	N/A		

Nature and Consequences of impact	Proposed mitigation and Extent to which impact can be reversed / avoided, managed or mitigated:	Person	In place (Yes / No)	Comments
Careless operation by the contractor within the identified coastal forest resulting in damage and/or loss to forest species.	The following measures must be carried out to mitigate against potential coastal forest loss during construction: <ul style="list-style-type: none"> <li>• Areas not within the construction footprint must be demarcated as no-go areas;</li> <li>• Heavy vehicles must avoid working near the forest as far as possible;</li> <li>• Vehicles may not drive within the coastal forest;</li> <li>• The entire site must be fenced.</li> </ul>	CON/APP		
Disturbance of the Richards Bay Lighthouse site due to construction activities resulting in the encroachment of alien vegetation into disturbed areas i.e. Castor Oil.	There is currently alien vegetation located on the surrounding area. <ul style="list-style-type: none"> <li>• Alien vegetation must not be allowed to encroach onto the site and must be continually removed during construction.</li> <li>• Construction must not promote further alien plant disturbances in the surrounding area</li> </ul>	CON/APP		
Positive impacts for the community include potential for local employment.	This is a positive impact.	N/A		
Continued disturbance of the vegetation community due to maintenance activities and potential encroachment by alien invasive plant species.	The following measures must be carried out to mitigate against continued disturbance of the vegetation community: <ul style="list-style-type: none"> <li>• All activities associated with the lighthouse must take place within the site boundary, under no circumstances may any work take place within the coastal forest.</li> <li>• All stormwater generated from the site must enter the formal stormwater system of the access road and must not be allowed to enter the coastal forest.</li> <li>• An ongoing alien invasive plant control plan must be implemented on site.</li> </ul>	CON/APP		
Continued displacement and fragmentation of the faunal community due to ongoing	The following measures must be carried out to mitigate against continued disturbance of the faunal community. The site will virtually be inert i.e. there will be no day-to-day operations apart from infrequently maintenance:	CON/APP		

Nature and Consequences of impact	Proposed mitigation and Extent to which impact can be reversed / avoided, managed or mitigated:	Person	In place (Yes / No)	Comments
anthropogenic disturbances (noise, traffic, dust and light).	<ul style="list-style-type: none"> <li>All activities associated with the lighthouse must take place within the site boundary, under no circumstances may any work take place within the coastal forest.</li> <li>All stormwater generated from the site must enter the formal stormwater system of the access road and must not be allowed to enter the coastal forest.</li> </ul>			
Habitat degradation by factors such as litter, road traffic and/or poaching.	<p>The following measures must be carried out to avoid a habitat degradation:</p> <ul style="list-style-type: none"> <li>Staff must be educated about the sensitivity of coastal forest prior to entering the site;</li> <li>No waste must be stored on site. Any contractor working on site must remove all waste from the site on a daily basis.</li> </ul>	CON/APP		
The lighthouse will have a positive impact on local maritime navigation which is a legislated requirement.	This is a positive impact.	N/A		
Suitability of operation with respect to surrounding land use i.e. a visual impact.	This impact is unavoidable. However, the lighthouse is not located directly adjacent to residential homes and therefore will not block any views. The monopole structure will also only shine out to sea to aid vessels.	CON/APP		
The loss of coastal vegetation will put cumulative pressure on entire ecosystem.	This impact is unavoidable. However, the loss of coastal vegetation will be minor compared to the overall ecosystem.			



## SECTION 3

## CONSTRUCTION MITIGATION MEASURES

## 3.0 Site Camp, Storage &amp; Handling of Hazardous and Non-Hazardous Materials &amp; Stockpiling

Activity	Required Action / remediation to control environmental impact	Person	In place (Yes / No)	Comments
Location & Establishment of the construction camp	<ul style="list-style-type: none"> <li>The construction camps must be marked out with the approval of the ECO.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>The site camps must be located on a flat portion of land.</li> <li>Do not set up the construction camp within 32m of any watercourse or within an area that will be flooded should water levels rise.</li> <li>Do not set up construction camps within the coastal forest.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>The site camps must be clearly demarcated and fenced off to prevent illegal entry.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>The following areas must be demarcated and clearly marked within the construction camps:               <ul style="list-style-type: none"> <li>A waste storage area</li> <li>A materials storage area</li> <li>Areas for fuel and hazardous chemical / flammable goods</li> <li>Stockpile areas</li> <li>Vehicle servicing and wash bay areas (if required)</li> <li>Parking area</li> </ul> </li> </ul>	CON		
Establishing storage areas & Stockpiles	<ul style="list-style-type: none"> <li>A waste storage area must be demarcated and suitable and sufficient waste bins must be provided within the camps. Storage of waste must be on a hard surface, and under cover. Liquid waste must be situated within a bunded area.               <ul style="list-style-type: none"> <li>Liquid waste and accumulated waste must be removed from site monthly by a recognized Waste Contractor.</li> </ul> </li> </ul>	CON		
	<ul style="list-style-type: none"> <li>A materials storage area must be identified and designated within the construction camps which must be located more than 32m from any watercourse. Materials, specifically liquid and potentially environmentally hazardous materials must be stored</li> </ul>	CON		

	within a bunded area (110% capacity of largest container) and on a hard surface. The storage area must be under cover.			
	<ul style="list-style-type: none"> <li>• <b>Areas for fuel and hazardous chemical / flammable goods</b> must be identified and clearly signposted within the construction camps. An inventory of the materials and volumes stored must be maintained and updated once a week. These areas must be located within a bunded, hard surfaced impermeable area.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>• <b>Bulk fuel storage:</b> No bulk fuel storage to occur on any of the sites.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>• <b>Designated areas for stockpiling of raw materials</b> must be demarcated within the construction camps. No stockpiling is to occur on or near slopes where they could be washed into the surrounding properties or into the rivers. All stockpiling areas must be approved by ECO and must be located more than 32m from the edge of any watercourse.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>• <b>Parking:</b> The contractor must designate parking areas on the sites and ensure that only these parking areas are used.</li> <li>• Vehicles must not park within 32m of any watercourse.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>• <b>Vehicle servicing and washing:</b> only emergency (breakdown where equipment is no longer mobile) and minor maintenance (e.g. greasing) may be done on the sites. <ul style="list-style-type: none"> <li>○ A designated area must be set aside for this, which must be hard surfaced and bunded.</li> <li>○ If emergency repairs are required, this must not be conducted within 32m of any watercourse, riparian zone or wet area.</li> <li>○ Drip trays must be used.</li> <li>○ Any other planned or required maintenance must be done off site at a suitable location.</li> <li>○ Vehicle washing must also be conducted off site at a designated vehicle wash bay, the washbay must be lined with impermeable material and must drain to a sump to ensure hydrocarbons, and other contaminants are separated out of</li> </ul> </li> </ul>	CON		

	<p>the effluent prior to remaining runoff being discharged into municipal sewer.</p> <ul style="list-style-type: none"> <li>No cement vehicles may be washed on site.</li> </ul>			
<b>Handling of liquids on site</b>	<ul style="list-style-type: none"> <li>Decanting of any liquids / chemicals paints etc. must be done within the confines of a drip tray or on a hardened surface within a bunded area.</li> <li>This must not be carried out within 32m of any watercourse.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>Decanting from large containers (e.g. 210L drums) must be done using a hand pump, where possible. If no hand pump is available, liquids must be decanted on a drip tray using a funnel.</li> <li>This must not be carried out within 32m of any watercourse.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>All handling of hazardous materials including cement must take place on a hardened surface or within a drip tray or cement mixing tray.</li> <li>This must not be carried out within 32m of any watercourse.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>Decanting of hazardous materials must take place within the site camp above drip trays or containers to prevent the potential spillage into these areas.</li> </ul>	CON		
<b>Inventory and record of substances stored on site</b>	<ul style="list-style-type: none"> <li>A full inventory of hazardous substances and Material Safety Data Sheet (MSDS) for each substance stored on site must be maintained and each substance must be stored and managed in accordance with the MSDS.</li> </ul>	CON		
<b>Storage of hazardous materials</b>	<ul style="list-style-type: none"> <li>Hazardous materials and liquids to be stored in the assigned storage area as per Section 3.0 of this EMPr.</li> </ul>	CON		

### 3.1 Administration & Records

Activity / Document	Required Action	Person	In place (Yes / No)	Comments
<b>EMPr</b>	<ul style="list-style-type: none"> <li>Keep a hard copy of the EMPr on site and ensure that it has been signed and received by the contractor and engineer.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>All contractors, the engineers and the ECO must have a copy of the EMPr before coming on to site.</li> </ul>	ECO/ ENG		

<b>Records</b>	<ul style="list-style-type: none"> <li>Keep records and proofs of all agreements, meetings etc. to demonstrate compliance with this EMPr.</li> </ul>	CON		
<b>Proof of raw material sourcing and resource use</b>	<ul style="list-style-type: none"> <li>Proof of sustainable source of all materials used must be obtained and documented especially for raw material i.e. topsoil, sands, natural gravels, crushed stone, clay liners, timber etc. <u>In other words, documented proof that materials have been sustainably sourced must be maintained on site for review by DEA.</u> <ul style="list-style-type: none"> <li>E.g.: sand may only be obtained from an approved sand winning operation, which is licensed by the Department of Mineral Resources (DMR) and has an approved EMPr for operation.</li> <li>Where materials are borrowed (mined), proof must be provided of authorization to utilise these materials from the landowner / mineral rights owner and the Department of Minerals and Energy.</li> </ul> </li> </ul>	CON/ EO		
<b>Water abstraction for dust suppression</b>	<ul style="list-style-type: none"> <li>Water used on site must be obtained from a municipal source. If this is not available and water needs to be obtained from a nearby water resource then the following will apply: <ul style="list-style-type: none"> <li>If water is to be extracted it must be from an approved source and permission from the land owner must be obtained.</li> <li>If water is extracted no more than 50 000l per day may be extracted. All water use must be registered with DWS.</li> <li>If water is extracted, a daily record of the volume of water extracted must be retained and: <ul style="list-style-type: none"> <li>The driver must record each truck load that is removed and this will be used to determine the volume of water extracted.</li> <li>These records must be provided to the ECO for record and review.</li> <li>The ECO must monitor volumes to ensure that usage remains below 50 cubic metres per property per day or that abstracted amounts remain within those allowed by the permit that must then need to be applied for.</li> </ul> </li> </ul> </li> <li>Water use must be controlled and reduced wherever possible.</li> </ul>	CON/ EO		

<b>Maintenance of the extraction point</b>	<ul style="list-style-type: none"> <li>• One point of entry must be established and approved by the ECO. Multiple entry points and pathways must not be permitted.</li> <li>• Multiple abstraction points are not permitted.</li> <li>• The abstraction point must not be established within wetland areas or in areas thickly vegetated by riparian vegetation.</li> <li>• The abstraction point must be easily accessible and where possible, located in close proximity to an established road to avoid creation of additional tracks.</li> <li>• The abstraction area must not be located on steep slopes where the point may be come eroded.</li> <li>• Vehicles approaching the extraction point must remain 32m away from the edge of the water resource except where required to pump directly from the stream/river.</li> <li>• No vehicle repairs or maintenance or refuelling may be conducted at the abstraction point.</li> <li>• Damage to the banks of any water resource must not take place.</li> <li>• Should the area become damaged or eroded, erosion protection measures such as sand bags or hessian sheeting must be put in place to allow the re-establishment of vegetation and stabilisation of the area.</li> <li>• Once an abstraction point is no longer being used, the area must be rehabilitated to its former state.</li> </ul>	CON/ EO		
<b>Proof of training</b>	<ul style="list-style-type: none"> <li>• Keep training attendance registers on file at all times.</li> </ul>	EO		
<b>Incident records &amp; Photographs</b>	<ul style="list-style-type: none"> <li>• Keep records of incidents that have occurred and how they were remediated. It is a good idea to take photographs when incidents occur and then to take follow up pictures to demonstrate remediation and keep these on record.</li> <li>• These records must be kept on site for review by DEA.</li> </ul>	EO		
<b>Appointment of ECO / EO</b>	<ul style="list-style-type: none"> <li>• Appoint an ECO (Environmental Control Officer) prior to commencement of construction to monitor the entire construction phase.</li> </ul>	APP		
	<ul style="list-style-type: none"> <li>• Keep proof of appointment and contact details as well as dates of audits.</li> </ul>	APP		
<b>Emergency response plan</b>	<ul style="list-style-type: none"> <li>• An emergency response plan must remain on site as must a copy of the EMPr and the Environmental Authorization.</li> </ul>	ECO		



<b>Audits</b>	<ul style="list-style-type: none"> <li>A record of audits conducted on the site as well as findings must be kept on site.</li> </ul>	CON/ EO		
<b>Permits &amp; Approvals</b>	<ul style="list-style-type: none"> <li>Keep all necessary permits and approvals on file i.e. construction licences etc.</li> <li>These must be kept on site for review by DEA.</li> </ul>	CON		
<b>MSDSs</b>	<ul style="list-style-type: none"> <li>Material Safety Data Sheets (MSDSs) are to be kept on site for all hazardous materials.</li> </ul>	CON		

### 3.2 Training & Awareness

Activity	Required Action / remediation to control environmental impact	Person	In place (Yes / No)	Comments
<b>Who should be trained &amp; Frequency of training</b>	<ul style="list-style-type: none"> <li>All construction staff must have basic environmental awareness training, which can be conducted at the same time as the required health &amp; safety training.</li> </ul>	EO		
	<ul style="list-style-type: none"> <li>Staff must be trained on their environmental responsibilities before commencing work and refresher sessions can be conducted during toolbox talks on specific areas causing problems.</li> </ul>	EO		
	<ul style="list-style-type: none"> <li>Staff must sign training register and Records of training must be kept.</li> <li>These records must be maintained on site for review by DEA.</li> </ul>	EO		
<b>Training Content and staff conduct</b>	<ul style="list-style-type: none"> <li>Training must include               <ol style="list-style-type: none"> <li>The definition of environment (people + air + soil + water +business);</li> <li>Reasons for conserving and protecting the environment;</li> <li>How the following activities can impact the environment: - Not using assigned ablutions, hazardous materials, uncleaned spills, mixing of cement or paint on soil or grass surfaces, waste management i.e. use of waste receptacles and waste separation for recycling, vehicle washing polluting soil &amp; ground water; litter;</li> <li>What to do to prevent the above impacting the environment i.e. assign impermeable mixing areas, no vehicle washing on site, use of waste receptacles and separation of waste</li> </ol> </li> </ul>	EO		

	<p>to allow for recycling, how to respond in an emergency and deal with a spill;</p> <ol style="list-style-type: none"> <li>5. Consideration of neighbours.</li> <li>6. Do not play music or create any other disturbance to neighbours.</li> <li>7. Use only the chemical toilets provided.</li> <li>8. No dumping to occur in sensitive areas on site.</li> <li>9. Use waste bins provided.</li> <li>10. Use drip trays provided.</li> <li>11. Do not build fires for any purpose on the site.</li> <li>12. Behave in socially acceptable manner and do not use drugs or alcohol on site.</li> <li>13. There is to be no hunting of wildlife on the site and no setting of snares or traps. No animals are to be harmed or harassed.</li> </ol>			
<b>Neighbours &amp; Working hours</b>	<ul style="list-style-type: none"> <li>• Local community members must be notified of the project and must be notified of the existence of any hazardous storage areas as well as the type of chemicals being used on site. This can be achieved through placement of signboards.</li> <li>• The contractor must enter into negotiation with the local community regarding the identification of areas where excess spoil can be used for rehabilitation purposes.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>• Limit hours of operation to weekdays 7-5pm and Saturday mornings 7- 12pm. Neighbours to be notified before construction on weekends takes place.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>• Advise the adjoining neighbours of the work and hours of work at least one week prior to commencement. This can also be indicated on the signboards.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>• Neighbours to be advised prior to periods where work will be done outside normal working hours.</li> </ul>	CON		

3.3 Sensitive Social Areas, Environmental Areas, Vegetation and Vegetation Clearing and Wildlife				
Activity	Required Action / remediation to control environmental impact	Person	In place (Yes / No)	Comments
Community	<ul style="list-style-type: none"> <li>The surrounding stakeholders must be made aware of the commencement of construction 30 days prior to construction. Alternate temporary access routes must be determined prior to the commencement of the construction.</li> </ul>	CON		
Soil	<ul style="list-style-type: none"> <li>Top soil removed during the excavations must be kept to one side</li> <li>This must then be re-used for rehabilitation purposes. Soil must be replaced in the same area that it was excavated from. Much of this topsoil, especially the top 30cm will retain grass and vegetation seeds.</li> <li>Soil stockpiles must not exceed 2m in height, must be covered, or grassed to prevent erosion caused by exposure to heavy wind or rain.</li> <li>Topsoil must not to be mixed with subsoil. Stockpiling of top and subsoils must be in the correct sequence. The soil profile must be restored to the natural structure with topsoil and subsoil being replaced in sequence.</li> <li>Soil must not to be stockpiled against tree trunks as this will encourage ant infestations.</li> </ul>	CON/ EO		
Excess Material	<ul style="list-style-type: none"> <li>Excess material must first be used for; <ul style="list-style-type: none"> <li>Creation of rock gabions where required for slope protection and erosion control;</li> <li>Rehabilitation of cuts</li> <li>Backfill for excavations.</li> </ul> </li> <li>Should the volume of excess spoil be too large to use in the manner described above, or if the density of spoil stockpiles becomes too high, the spoil must be removed from the working area to a permitted landfill site.</li> </ul>	CON/ EO		
Vegetation clearing and planting	<ul style="list-style-type: none"> <li>Only vegetation within the development footprint may be cleared. Any vegetation clearing must be done under the supervision of the ECO and Engineer.</li> <li>No non-indigenous garden variety plants must be used.</li> </ul>	CON/ EO		

<b>Alien vegetation control</b>	<ul style="list-style-type: none"> <li>On-going control of alien vegetation within the construction area must be maintained.</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>An alien eradication program must be in place to control the spread of alien invasive species on site.</li> </ul>	CON/ EO		
<b>Palaeontological, Cultural and Heritage Find Protocol</b>	<ul style="list-style-type: none"> <li>In the case of palaeontological/heritage find, it must be reported to AMAFA and work in the affected area must be stopped immediately. Working through AMAFA a palaeontologist/heritage specialist must be notified, and a site visit must be arranged at the earliest possible time with the palaeontologist/heritage specialist and an official from AMAFA. In the case of the ECO or the Site Manager becoming aware of suspicious looking material that might be a “Significant Find”, the construction must be halted in that specific area and the palaeontologist/heritage specialist must be given enough time to reach the site and remove the material before excavation continues.</li> </ul>	CON		
<b>Biodiversity specialist measures</b>	<ul style="list-style-type: none"> <li>No more than two weeks in advance of vegetation clearance that will commence during the breeding season (1 September – 1 March).</li> <li>A qualified ECO with a Zoologist background must conduct a pre-construction survey of all potential special-status bird nesting habitat in the vicinity of the project area, and on the project areas.</li> <li>If active nests are found, avoidance procedures must be implemented on a case-by-case basis. Avoidance procedures may include the implementation of buffer zones, relocation of birds, or seasonal avoidance. If buffers are created, a no disturbance zone must be created around active nests during the breeding season by a suitably qualified Zoologist</li> <li>If any faunal species are recorded during construction, an appropriate specialist must be consulted to identify the correct course of action. These species must either be moved from the area or allowed time to move off;</li> <li>During vegetation clearance, methods must be employed to minimize potential harm to fauna species. Clearing has to take place in a phased and slow manner, commencing from the</li> </ul>	ECO		

	<p>interior of the site progressing outwards towards the boundary to maximize potential for mobile species to move to adjacent areas;</p> <ul style="list-style-type: none"> <li>• Prior and during vegetation clearance any larger fauna species noted must be given the opportunity to move away from the construction machinery;</li> <li>• Fauna species such as frogs and reptiles that have not moved away must be carefully and safely removed to a suitable location beyond the extent of the development footprint by a suitably qualified ECO trained in the handling and relocation of animals;</li> <li>• Fencing must be erected around the decided project area to prevent workers and members of the public from entering the surrounding areas. This fence should have small openings to allow wildlife to pass through;</li> <li>• The entire site and access roads must be secured, and all efforts must be made to prevent illegal access to the areas, especially the coastal forest;</li> <li>• Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site;</li> <li>• No trapping, killing or poisoning of any wildlife is to be allowed on site;</li> <li>• During the construction phase noise must be kept to a minimum to reduce the impact of the development on the fauna residing on the site;</li> <li>• Staff must be educated about the sensitivity of faunal species and measures should be put in place to deal with any species that are encountered during the construction process;</li> <li>• Construction activities and vehicles could cause spillages of lubricants, fuels and construction material which could then be transported to the surrounding areas, impacting the functioning of the systems. All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the wetland and buffer areas; and</li> <li>• The intentional killing of any animals including snakes, insects, lizards, birds or other animals must be strictly prohibited.</li> <li>• As far as possible, the proposed developments must be placed in areas that have already been disturbed. Areas to be</li> </ul>		
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	<p>developed must be specifically demarcated so that during the construction phase, only the demarcated areas be impacted upon (including fencing off the defined project area);</p> <ul style="list-style-type: none"> <li>• Areas of indigenous vegetation, even secondary communities must under no circumstances be fragmented or disturbed further or used as an area for dumping of waste;</li> <li>• Coastal forest areas outside the footprint must be declared as 'no-go' areas during the construction and operational phases and all efforts must be made to prevent access to this area from construction workers, machinery and the general public;</li> <li>• Where possible, existing access routes and walking paths must be made use of for vehicles and machinery, and new routes limited;</li> <li>• All laydown, storage areas etc. must be restricted to within transformed areas and all access roads must be kept within this area or from existing access roads;</li> <li>• A qualified environmental control officer must be on site when construction begins to identify species that will be directly disturbed and to relocate fauna/flora that is found during construction (including all reptiles and amphibians);</li> <li>• Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species; and</li> <li>• Compilation of and implementation of an alien vegetation management plan for the entire site.</li> </ul>			
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3.4 Soil, Stormwater Runoff; Erosion				
Activity	Required Action / remediation to control environmental impact	Person	In place (Yes / No)	Comments
Stormwater system	<ul style="list-style-type: none"> <li>Temporary stormwater protection measures must be established before construction activities commence.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>No contaminated runoff or grey water is allowed to be discharged from the Site Camps into the surrounding environment.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>Uncontrolled storm water must not be allowed to flow into surrounding properties and must enter existing stormwater channels.</li> </ul>	CON		
Storm water Quality	<ul style="list-style-type: none"> <li>Only clean stormwater may be diverted off the site.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>Washings from any vessels or any containers must not enter storm water. These washings are to be contained and removed as waste.</li> </ul>	CON		
Incidents	<ul style="list-style-type: none"> <li>Entry of any substance (i.e. any material or substance that is not clean stormwater) into the storm water or a water body is considered an incident and must be reported to the ECO <b>immediately</b> for the purposes of maintaining the site's incident records.</li> </ul>	CON/ EO		
Storm water flow	<ul style="list-style-type: none"> <li>The drainage system must be regularly checked to ensure an unobstructed water flow.</li> <li>Channelled flow must not be permitted to enter any coastal forest.</li> </ul>	CON		
Erosion Control	<ul style="list-style-type: none"> <li>Install erosion barriers (gabion baskets, berms or diversion ditches, sandbags) and other sediment control structures (grates or grids, geofabric) before clearing in order to prevent substances from entering exposed drains or channels.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>Identify any steeper areas where erosion is more likely to occur. These areas must be protected from erosion. This can be achieved through planting of vegetation, placement of berms or use of hessian material.</li> </ul>	CON/ EO		

	<ul style="list-style-type: none"> <li>Regularly check and clean material from behind erosion barriers.</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>The contractor must install erosion barriers (gabion baskets, berms or diversion ditches, sandbags) and other sediment control structures (grates or grids, geofabric) where required, especially to protect the costal forest.</li> </ul>	CON/ EO		

### 3.5 Housekeeping, Waste Storage Handling and Disposal

Activity	Required Action / remediation to control environmental impact	Person	In place (Yes / No)	Comments
<b>General Waste Storage</b>	<ul style="list-style-type: none"> <li>The waste area to be designated and demarcated within the construction camp (as per section 3).</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>Solid waste must be stored in covered, tip proof metal drums to be collected and disposed of by a certified waste contractor.</li> <li>Proof of safe disposal of solid waste must documented and these records must be maintained on site for review by DEA.</li> </ul>	CON		
<b>Hazardous waste</b>	<ul style="list-style-type: none"> <li>Hazardous materials that require disposal (cement, paints, solvents, old fuel/oil etc.) must be disposed of at a registered hazardous landfill site.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>These materials must be removed by a hazardous waste contractor. Proof of disposal must be available to the ECO for scrutiny and kept on record.</li> <li>Proof of safe disposal of solid waste must documented and these records must be maintained on site for review by DEA.</li> </ul>	CON		
<b>Waste from Chemical toilets</b>	<ul style="list-style-type: none"> <li>Install chemical toilets and insure disposal of waste at a licenced disposal facility. Proof of disposal must be kept on site at all times.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>Waste from the toilets must be collected on a weekly basis by a registered and reputable company.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>Safe disposal certificates for toilet waste must be obtained and kept on site as assurance that the waste was properly disposed of.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>Toilets must not be situated on slopes or within 40m of any watercourse and must be secured to prevent them tipping over.</li> </ul>	CON		

	<ul style="list-style-type: none"> <li>• Staff must use facilities provided and are not permitted to use any other areas on site as toilet facilities.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>• Chemical toilets must be checked daily and cleaned.</li> </ul>	CON		
<b>Waste storage and handling</b>	<ul style="list-style-type: none"> <li>• No waste may be buried or burned on site or dumped on surrounding properties and farmland. All waste must be disposed of at a licenced waste disposal facility. Proof of disposal must be kept on site at all times.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>• All skips must be covered to contain odours and prevent waste from blowing around the site.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>• A register of all waste generated and disposed of must be maintained.</li> </ul>	CON/EO		
	<ul style="list-style-type: none"> <li>• No dumping is permitted. There must be no dumping on site under any circumstances. The contractor is liable to a fine should there be any evidence of illegal dumping.</li> <li>• The ECO to review damage and advise on rehabilitation measures if required.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>• Do not place waste containers, skip bins or building materials on steep slopes or within 32m of any watercourse.</li> </ul>	CON/EO		
	<ul style="list-style-type: none"> <li>• Waste accumulated on site must be removed on a weekly basis. The waste must be moved to a licenced waste disposal facility.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>• Provide litterbins throughout the site for use by all staff on site.</li> </ul>	CON		
<b>Waste separation</b>	<ul style="list-style-type: none"> <li>• <b>Hazardous:</b> Hazardous waste must be stored separately from general waste. <ul style="list-style-type: none"> <li>○ Hazardous waste must be disposed of at an approved hazardous waste landfill and safe disposal certificates must be obtained.</li> <li>○ Hazardous waste includes used oils, lubricants, solvents, solvent based paints, concrete waste, and cement.</li> </ul> </li> </ul>	CON/EO		

	<ul style="list-style-type: none"> <li>• <b>Oils</b> must be within a bunded storage area and treated as flammable waste. <ul style="list-style-type: none"> <li>○ Where possible used oils must be recycled.</li> <li>○ Safe disposal certificates must be kept on site demonstrating disposal or recycling of the used oils.</li> <li>○ Solid paint waste may be disposed of as general waste.</li> </ul> </li> </ul>	CON/EO		
	<ul style="list-style-type: none"> <li>• <b>Concrete waste:</b> <ul style="list-style-type: none"> <li>○ Return excess concrete with the delivery truck to supplier for recycling or proper disposal.</li> <li>○ Any other excess concrete i.e. on-site mixed concrete can be stored in a lined bin for eventual recycling or disposal.</li> </ul> </li> </ul>	CON/EO		

### 3.6 Noise

Activity	Required Action / remediation to control environmental impact	Person	In place (Yes / No)	Comments
Noise Generation and suppression	<ul style="list-style-type: none"> <li>• All construction vehicles must not emit excessive noise.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>• Workers must be trained regarding noise on site and construction hours must be kept to working hours (07h00 to 17h00).</li> </ul>	CON		

### 3.7 Dust & Emissions

Activity	Required Action / remediation to control environmental impact	Person	In place (Yes / No)	Comments
Dust from stockpiles	<ul style="list-style-type: none"> <li>• Cover any stockpiled fine material that may release dust with plastic.</li> </ul>	CON		
Dust from surfaces	<ul style="list-style-type: none"> <li>• Damp down surfaces and stockpiles as required to reduce windblown dust.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>• A water cart may be used which must remain on designated roadways if required.</li> </ul>	CON		

	<ul style="list-style-type: none"> <li>If dust from the site is likely to create problems for nearby residents, these areas must be shielded with shade cloth.</li> </ul>	CON		
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### 3.8 Vehicle Maintenance, Operation, Driving On Site and Vehicle Washing

Activity	Required Action / remediation to control environmental impact	Person	In place (Yes / No)	Comments
Access points	<ul style="list-style-type: none"> <li>Haulage roads must be demarcated at site set up.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>Turning areas must be located within the construction footprint and must be clearly designated.</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>Temporary access roads must not be located within adjoining properties.</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>No ad hoc haulage roads or turning areas may be created.</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>Limit vehicle entry point to the designated access point and ensure no other point of entry is used.</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>All vehicles to remain in the parking area designated within the construction site.</li> </ul>	CON/ EO		
Vehicle servicing and repairs	<ul style="list-style-type: none"> <li>No major equipment or vehicle servicing to occur on site i.e. major disassembly and repair work, clutch replacements and oil or lubricant changes must be carried out at a suitably equipped workshop.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>Only minor emergency repairs, i.e. those necessary to get the vehicle moving so that it can be taken to a repair facility to be carried out i.e. stopping of oil leaks, lubricating of hydraulics, changing of buckets / breakers on Excavators and TLBs or changing of tyres. This must be carried out in designated work shop areas within the allowed construction camps. These areas to be hard surfaced and bunded.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>Drip trays are to be used by all leaking vehicles and equipment.</li> </ul>	CON/ EO		

	<ul style="list-style-type: none"> <li>All vehicles to be equipped with drip trays.</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>All small machinery used on site must be situated on a drip tray (i.e. pumps, generators, compressors etc.).</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>All vehicles to be regularly maintained and maintenance records must be made available on request.</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>No leaking vehicles to be allowed on site.</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>Any vehicles that are leaking must not be allowed entry to site.</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>No vehicles to be washed on site - cement trucks are not permitted to wash out cement mixers on site.</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>Only emergency (breakdown where equipment is no longer mobile) and minor maintenance (e.g. greasing) may be done on site. Any other planned or required maintenance must be done offsite at a suitable location.</li> </ul>	CON		

**3.9 Incidents, Spills and Emergency Response**

Activity	Required Action / remediation to control environmental impact	Person	In place (Yes / No)	Comments
<b>Spill kits</b>	<ul style="list-style-type: none"> <li>Adequate spill kits and containers for spilled and contaminated material to be on standby on site.</li> </ul>	CON/EO		
	<ul style="list-style-type: none"> <li>Keep clearly marked booms and/or absorbent material on site to contain spills if they occur.</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>All staff must be trained on how to react in the case of an emergency.</li> </ul>	CON-SHE		
	<ul style="list-style-type: none"> <li>If a spill occurs, stop the source, contain it, clean up in accordance with MSDSs and notify relevant authorities.</li> </ul>	CON/ EO		



	<ul style="list-style-type: none"> <li>• Make staff aware of emergency phone numbers to use in the case of a large spill.</li> </ul>	CON/ EO		
Definition of incidents	<ul style="list-style-type: none"> <li>• All incidents are to be recorded.</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>• <b>Minor incidents:</b> small spills less than 5l that do not enter stormwater or the stream/river, minor non-compliance with EMPr that does not cause major environmental impact i.e. housekeeping issues etc. <ul style="list-style-type: none"> <li>○ <b>Action:</b> Supervisor and staff on site to record and address and notify ECO. Take photos of spill. Prevent spill from spreading and contain. Collect spilled material and contaminated soil and place in sealed container for disposal. ECO to advise on remediation measures and to follow up on actions taken to address incident.</li> <li>○ <b>Records:</b> On site incident register.</li> </ul> </li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>• <b>Major incidents:</b> Large spills or any spills that enter stormwater or the stream/river, fires, explosions. Please see definition of a reportable incident provided below. <ul style="list-style-type: none"> <li>○ <b>Action:</b> Report immediately to ECO, action to be taken to prevent further damage and incident to be reported to authorities. ECO to advise on remediation measures and to follow up on actions taken to address incident.</li> <li>○ <b>Records:</b> On site incident register and report to authorities.</li> </ul> </li> </ul>	CON/ EO		

### 3.10 Sewage and Grey Water Management

Activity	Required Action / remediation to control environmental impact	Person	In place (Yes / No)	Comments
Sewage	<ul style="list-style-type: none"> <li>• Adequate toilet facilities (such as chemical toilets) sufficient in number to cater for the number of staff on site must be provided. One toilet per 15 staff must be provided.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>• Waste must be managed as per section 3.5 namely removed by licensed contractor and safe disposal certificates retained to prove proper disposal.</li> <li>• Safe disposal certificates must be kept on site for review by the DEA.</li> </ul>	CON/ EO		

<b>Grey water / wash water</b>	<ul style="list-style-type: none"> <li>• Grey water must not be permitted to enter the surrounding properties or stormwater.</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>• Vehicles, especially cement trucks, must not be washed on site these must be washed at a wash bay facility off site.</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>• Alternately the wash water can be collected and returned with the supplier's truck for disposal by the supplier.</li> </ul>	CON/ EO		

## SECTION 4 POST CONSTRUCTION, REHABILITATION AND OPERATION

4.0 Post Construction Activities				
Activity	Required Action / remediation to control environmental impact	Person	In place (Yes / No)	Comments
<b>Post Construction Audit</b>	<ul style="list-style-type: none"> <li>Clearance from the ECO must be obtained to ensure the all of the requirements of the EMPr have been complied with.</li> </ul>	ECO		
<b>Stormwater</b>	<ul style="list-style-type: none"> <li>The Contractor must check that the stormwater channels are free from building rubble, spoil materials, and waste materials.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>Ensure that in the long term; stormwater is protected from ingress by potential pollutants.</li> </ul>	CON		
<b>Waste &amp; Spills</b>	<ul style="list-style-type: none"> <li>All spillages must be cleaned and contaminated soil must be removed and disposed.</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>All remaining waste bins and / or skips must be removed and disposed of. Records of disposal must be retained.</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>All excess concrete must be removed from site on completion of works and disposed of. Washing of the excess into the ground is not allowed.</li> </ul>	CON/ EO		
	<ul style="list-style-type: none"> <li>All excess aggregate must also be removed.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>Used oil must have been collected by a registered used oil contractor and documentation to this effect provided.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>Surfaces are to be checked for waste products from activities such as concreting are cleared in a manner approved by the ECO.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>No litter must be left on site.</li> </ul>	CON/EO		
	<ul style="list-style-type: none"> <li>Any fences, barriers, or demarcations utilized for the construction phase must be removed and disposed of.</li> </ul>	CON		

<b>Structures, materials and stockpiles</b>	<ul style="list-style-type: none"> <li>All structures and imported materials within the construction camp must be removed.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>The remaining building materials must be removed from the site.</li> </ul>	CON		
<b>Damage</b>	<ul style="list-style-type: none"> <li>Any damage incurred on the neighbouring homesteads by the contractor must be repaired by the contractor.</li> </ul>	CON		
	<ul style="list-style-type: none"> <li>Any damage to existing infrastructure must be repaired or replaced on completion of the project.</li> <li>Damage to water pipes or sewer infrastructure must be considered as emergency incidents whereby correction must be immediate so as not to waste water resources and to not create environmental damage.</li> </ul>	CON		
<b>Close Out</b>	<ul style="list-style-type: none"> <li>A meeting must be held between Engineer, the ECO, and the contractor to approve all remediation activities and ensure that the site has been restored to a condition, which has been approved by the Engineer.</li> </ul>	ENG		
<b>Vegetation</b>	<ul style="list-style-type: none"> <li>All vegetation planting must be completed and any areas that have been disturbed or cleared must have been rehabilitated and re vegetated.</li> </ul>	ECO		
	<ul style="list-style-type: none"> <li>Re-vegetation of cleared land must utilize only 100% locally indigenous plant material to ensure no erosion occurs once the site is vacated.</li> </ul>	CON/EO		
	<ul style="list-style-type: none"> <li>Ensure that no sensitive habitats have been damaged during the construction phase.</li> </ul>	ECO		
	<ul style="list-style-type: none"> <li>Where habitats have been damaged these must be reported to the ECO and procedures for rehabilitation of these habitats must be undertaken.</li> </ul>	CON/EO		
<b>Erosion</b>	<ul style="list-style-type: none"> <li>Any eroded soil on paths / roadways / other areas must be collected and replaced in the area from which it was eroded. These high-risk erosion areas must be protected from further soil erosion.</li> </ul>	CON/EO		

4.1 Rehabilitation				
Activity	Required Action / remediation to control environmental impact	Person	In place (Yes / No)	Comments
Rehabilitation surrounding areas	<ul style="list-style-type: none"> <li>Cleared areas must not be left exposed for periods longer than two weeks and must be re-vegetated in stages as each section is completed.</li> <li>Where serious habitat damage has taken the damaged must be reported to the ECO. Consultation between the ECO, contractor, and engineer must take place. Whereby the contractor must develop and suitable method statement which must focus on the rehabilitation of the damaged area. This method statement must be approved by both the ECO and engineer. The contractor must then implement this method statement under the supervision of the ECO.</li> <li>The entire construction footprint must be rehabilitated. Coastal dune species endemic to the area including protected trees such as Coast Milkwood must be used to stabilize the banks surrounding the site as compensation for the indigenous trees species which will be lost.</li> </ul>	CON/ EO		
Soil	<ul style="list-style-type: none"> <li>Top soil removed during the excavations must be kept to one side and re-used in the same area that it was excavated from. Much of this topsoil, especially the top 30cm will retain grass and vegetation seeds.</li> <li>This top soil to be used when re-vegetating and rehabilitating areas cleared for construction/ excavation.</li> <li>In instances where soil compaction has taken place, the compaction must be reversed.</li> </ul>	CON/ EO		
Rehabilitation of eroded areas	<ul style="list-style-type: none"> <li>Any erosion damage caused during construction must be repaired. The affected area must be reshaped and soil replaced.</li> <li>The eroded area must be re-vegetated or measures put in place to control further erosion. The contractor must install erosion barriers (gabion baskets, berms or diversion ditches, sandbags) and other sediment control structures (grates or grids, geofabric).</li> </ul>	CON/ EO		

<b>Removal of alien invasive plants</b>	<ul style="list-style-type: none"> <li>• Alien invasive species must be removed on an on-going basis.</li> <li>• Use of chemical pesticides must be avoided and mechanical removal by hand is preferred.</li> </ul>	CON/ EO		
<b>Damage to any area outside the construction footprint.</b>	<ul style="list-style-type: none"> <li>• Where a area outside the construction footprint has been damaged the following measures are to be taken to ensure restoration of the habitat: <ul style="list-style-type: none"> <li>○ ECO must assess the damaged area</li> <li>○ Any construction debris or contaminants must be removed.</li> <li>○ Area must be vegetated with suitable indigenous vegetation.</li> </ul> </li> <li>• No loose soil or damaged banks can be left behind after construction.</li> </ul>	CON/ EO		

#### 4.2 Operation

Activity	Required Action / remediation to control environmental impact	Person	In place (Yes / No)	Comments
<b>Maintenance of the lighthouse</b>	<ul style="list-style-type: none"> <li>• All activities associated with the lighthouse must take place within the site boundary, under no circumstances may any work take place within the costal forest.</li> <li>• Staff must be educated about the sensitivity of coastal forest prior to entering the site;</li> <li>• No waste must be stored on site. Any contractor working on site must remove all waste from the site on a daily basis.</li> <li>• Any maintenance that triggers a Listing Notice not covered in the approved Environmental Authorisation must only take place once approval has been received from DEA.</li> </ul>	APP		
<b>Soil Erosion</b>	<ul style="list-style-type: none"> <li>• The erosion protection features installed on the site must be checked to ensure, they continue to perform their function during the operational phase of the project.</li> </ul>	APP		
<b>Vegetation</b>	<ul style="list-style-type: none"> <li>• Alien vegetation must be monitored and removed on an on-going basis.</li> <li>• Indigenous vegetation planting must continue on an on-going basis if it is required.</li> </ul>	APP		



<b>Stormwater</b>	<ul style="list-style-type: none"> <li>All stormwater generated from the site must not be allowed to enter the coastal forest.</li> </ul>	APP		
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## SECTION 5

## DEFINITIONS

### **Stormwater**

Clean rainwater, must be allowed to enter the stormwater system or natural water bodies without causing erosion. Stormwater must not be contaminated with any other substance including soaps, washings, hazardous materials, soil etc.

### **Grey water**

This is wash water that may contain non-hazardous soaps i.e. bath water, vehicle wash water etc. This must not be permitted to enter the stormwater system but can be disposed of in the sewage system or as effluent. If no sewage system is available on site the grey water must be collected and disposed of.

### **Sewage**

Human excrement from chemical toilets.

### **Raw materials for which source statement must be obtained**

Topsoil, sands, natural gravels, crushed stone, asphalt, clay liners, timber etc. E.G.: sand may only be obtained from an approved sand winning operation, which is licensed and has an approved EMPr for operation.

### **Incidents**

All incidents must be recorded. Minor incidents could include small spills of less than 5l that do not enter a water body or any stormwater drains, as well as housekeeping issues and general small non-compliances with the requirements of the EMPr. Major incidents are those that must be reported to the authorities and include all incidents involving contamination of a water body or stormwater or other reportable incidents as defined below.

**Reportable incident** is defined as 'an unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed' NEMA Section 30, 'includes any incident or accident in which a substance (a) pollutes or has the potential to pollute a water resource; or (b) has, or is likely to have, a detrimental effect on a water resource.' NWA Section 20.



**SECTION 6**

**RECORDS**

**Training Register – Record any training that has taken place.**

**Training Conducted:**

**Training provided by:**

Date of Training	Name	Signature



Non-conformance Record – Record any non-conformances i.e. small spills, overflowing waste bins etc.				
Date of Non-conformance	Details of non-conformance	Mitigation required	Corrective action taken	Date action completed

Complaints register – Record any complaints received from neighbours or the public regarding dust or pollutions, noise or nuisance.					
Date of complaint	Complainant's Name	Complainants Contact Number	Details of complaint	Corrective action taken	Date action completed

## Environmental Emergency Response and Definition of an Incident

<b>Aim of this document</b>	<ul style="list-style-type: none"> <li>To effectively manage response to emergency incidents and control these incidents should they occur.</li> <li>To ensure that such incidents are recorded and, where possible, all measures are taken to prevent them from re-occurring.</li> <li>To provide a definition for what would be considered a reportable incident in terms of the environmental legislation.</li> </ul> <p>Activities covered in this procedure include:</p> <ul style="list-style-type: none"> <li>Identification and definition of an incident and whether or not it needs to be reported to the authorities.</li> <li>Reporting to the relevant authorities in the event that a reportable incident occurs</li> <li>Procedure to follow in the event of a spill or fire.</li> </ul>
<b>Personnel Duties and Responsibilities</b>	<p>The contractor is responsible for:</p> <ul style="list-style-type: none"> <li>Ensuring all activities are carried out as per this procedure and that the company complies with relevant legislation.</li> <li>Maintaining a register of all incidents as well as ensuring that an incident report is generated for each incident, including details of the incident and how it was closed out.</li> <li>Ensuring that safe disposal certificates are obtained for any waste materials generated as a result of an incident and that this waste is recorded.</li> <li>Providing the necessary spill kit equipment and drums for storage of contaminated soil etc.</li> </ul>
<b>Training Requirements</b>	<ul style="list-style-type: none"> <li>All personnel and manpower to undergo a site safety and environmental induction prior to starting work on site. All employees to be trained on how to respond to an environmental incident and who to contact in order to ensure that the incident is addressed and recorded and if necessary reported.</li> </ul>
<b>Definition of a “reportable incident”</b>	<ul style="list-style-type: none"> <li>In terms of the National Environmental Management Act, major incidents must be reported to the authorities. In terms of the National Water Act, any incident involving a substance which has the potential to pollute a water resource must be reported i.e. any spill of into a watercourse or into the stormwater system must be reported. The relevant sections from the legislation are provided below:</li> </ul>
<b>National Environmental Management Act</b>	<p><i>As defined by NEMA, section 30 “Control of emergency incidents”.</i></p> <p><i>(1) In this section—</i></p> <p><i>(a) “incident” means an unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed;</i></p> <p><i>(b) “responsible person” includes any person who—</i></p> <p><i>(i) is responsible for the incident;</i></p> <p><i>(ii) owns any hazardous substance involved in the incident; or</i></p> <p><i>(iii) was in control of any hazardous substance involved in the incident at the time of the incident;</i></p> <p><i>(c) “relevant authority” means—</i></p>



	<p>(i) a municipality with jurisdiction over the area in which an incident occurs;</p> <p>(ii) a provincial head of department or any other provincial official designated for that purpose by the MEC in a province in which an incident occurs;</p> <p>(iii) the Director General;</p> <p>(iv) any other Director General of a national department.</p>
<b>National Water Act</b>	<p>As defined by the National Water Act section 20 "Control of emergency incidents"</p> <p>(1) In this section "incident" includes any incident or accident in which a substance -</p> <p>(a) pollutes or has the potential to pollute a water resource; or</p> <p>(b) has, or is likely to have, a detrimental effect on a water resource.</p>
<b>Reporting to the authorities</b>	<p>In the event that a reportable incident occurs, the Site Agent / Project Manager and Environmental Control Officer must be notified immediately. No site staff may communicate directly with the authorities.</p> <p>The relevant sections from the legislation are included below:</p> <p>As taken from NEMA, section 30: Control of Emergency Incidents:</p> <p>(3) The responsible person or, where the incident occurred in the course of that person's employment, his or her employer must forthwith after knowledge of the incident, report through the most effective means reasonably available—</p> <p>(a) the nature of the incident;</p> <p>(b) any risks posed by the incident to public health, safety and property;</p> <p>(c) the toxicity of substances or byproducts released by the incident; and</p> <p>(d) any steps that should be taken in order to avoid or minimise the effects of the incident on public health and the environment to—</p> <p>(i) the Director General;</p> <p>(ii) the South African Police Services and the relevant fire prevention service;</p> <p>(iii) the relevant provincial head of department or municipality; and</p> <p>(iv) all persons whose health may be affected by the incident.</p> <p>(4) The responsible person or, where the incident occurred in the course of that person's employment, his or her employer, must, as soon as reasonably practicable after knowledge of the incident—</p> <p>(a) take all reasonable measures to contain and minimise the effects of the incident, including its effects on the environment and any risks posed by the incident to the health, safety and property of persons;</p> <p>(b) undertake cleanup procedures;</p> <p>(c) remedy the effects of the incident;</p> <p>(d) assess the immediate and long term effects of the incident on the environment and public health.</p> <p>(5) The responsible person or, where the incident occurred in the course of that person's employment, his or her employer, must, within 14 days of the incident, report to the Director General, provincial head of department and municipality such information as is available to enable an initial evaluation of the incident, including—</p> <p>(a) the nature of the incident;</p> <p>(b) the substances involved and an estimation of the quantity released and their possible acute effect on persons and the environment and data needed to assess these effects;</p>

	<p>(c) initial measures taken to minimise impacts;</p> <p>(d) causes of the incident, whether direct or indirect, including equipment, technology, system, or management failure; and</p> <p>(e) measures taken and to be taken to avoid a recurrence of such incident.</p> <p>(6) A relevant authority may direct the responsible person to undertake specific measures within a specific time to fulfil his or her obligations under subsections (4) and (5): Provided that the relevant authority must, when considering any such measure or time period, have regard to the following:</p> <p>(a) the principles set out in section 2;</p> <p>(b) the severity of any impact on the environment as a result of the incident and the costs of the measures being considered;</p> <p>(c) any measures already taken or proposed by the person on whom measures are to be imposed, if applicable;</p> <p>(d) the desirability of the State fulfilling its role as custodian holding the environment in public trust for the people;</p> <p>(e) any other relevant factors.</p> <p>(7) A verbal directive must be confirmed in writing at the earliest opportunity, which must be within seven days.</p> <p>(8) Should—</p> <p>(a) the responsible person fail to comply, or inadequately comply with a directive under subsection (6);</p> <p>(b) there be uncertainty as to who the responsible person is; or</p> <p>(c) there be an immediate risk of serious danger to the public or potentially serious detriment to the environment, a relevant authority may take the measures it considers necessary to—</p> <p>(i) contain and minimise the effects of the incident;</p> <p>(ii) undertake cleanup procedures; and</p> <p>(iii) remedy the effects of the incident.</p>
<p><b>National Water Act section 20: Control of emergency incidents</b></p>	<p>(2) In this section, "responsible person" includes any person who -</p> <p>(a) is responsible for the incident;</p> <p>(b) owns the substance involved in the incident; or</p> <p>(c) was in control of the substance involved in the incident at the time of the incident.</p> <p>(3) The responsible person, any other person involved in the incident or any other person with knowledge of the incident must, as soon as reasonably practicable after obtaining knowledge of the incident, report to -</p> <p>(a) the Department;</p> <p>(b) the South African Police Service or the relevant fire department; or</p> <p>(c) the relevant catchment management agency.</p> <p>(4) A responsible person must -</p> <p>(a) take all reasonable measures to contain and minimise the effects of the incident;</p> <p>(b) undertake clean-up procedures;</p> <p>(c) remedy the effects of the incident; and</p>

	<i>(d) take such measures as the catchment management agency may either verbally or in writing direct within the time specified by such institution.</i>
<b>Spill response</b>	
<b>Responsible Person/s</b>	The spill is reported to the site foreman who must notify his superior. All employees must be made aware of the procedure in case of a spill.
<b>Procedure</b>	<ol style="list-style-type: none"> <li>1. Identify nature of spill e.g. paint, oil or lubricants</li> <li>2. Locate spill kit</li> <li>3. Contain spill according to the training provided</li> <li>4. Where necessary, contact external spill control contractors</li> <li>5. Ensure spill does not cause any external contamination (such as storm/ground water or soil)</li> <li>6. Ensure that cleanup measures are taken if any contamination has occurred</li> <li>7. Record in emergency response record the: <ul style="list-style-type: none"> <li>• Nature of incident</li> <li>• Cause of incident</li> <li>• Clean up measures</li> <li>• Mitigation measures taken</li> </ul> </li> <li>8. Record in non-conformance register</li> <li>9. The ECO and Project Manager will determine if the event qualifies as an incident and take steps to report the incident to the necessary authorities i.e. DEA and DWA.</li> <li>10. The ECO shall review all spill reports</li> </ol>
<b>Fire</b>	
<b>Responsible Person/s</b>	The fire is reported to the site foreman All employees must be made aware of the procedure in case of fire.
<b>Procedure</b>	<ol style="list-style-type: none"> <li>1. Identify source and nature of fire.</li> <li>2. In case of small fire extinguish with material appropriate to the nature of the fire</li> <li>3. In case of a large fire contact Fire Department</li> <li>4. In the site camp, seal off exposed stormwater drains to ensure firewater does not cause any external contamination. If on site, take measures to prevent firewater entering any water body.</li> <li>5. Ensure that clean-up measures are taken if any contamination has occurred</li> <li>6. Record in emergency response record the: <ul style="list-style-type: none"> <li>• Nature of incident</li> <li>• Cause of incident</li> <li>• Clean up measures</li> <li>• Mitigation measures taken</li> </ul> </li> <li>7. Record in non-compliance register</li> </ol>

	<ol style="list-style-type: none"> <li>8. The ECO and Project Manager will determine if the event qualifies as an incident and take steps to report to the authorities.</li> <li>9. The EO shall review incident / nonconformance reports</li> <li>10. Adjustments will be made, if necessary, to the operational and emergency procedures and the Environmental Management System to prevent future occurrences</li> </ol>
<b>Explosion</b>	
<b>Responsible Person/S</b>	The explosion is reported to the site foreman who must notify his superior. All employees must be made aware of the procedure in case of explosion.
<b>Procedure</b>	<ol style="list-style-type: none"> <li>1. Identify source and nature of explosion.</li> <li>2. In case of small fire as a result of the explosion, extinguish with material appropriate to the nature of the fire</li> <li>3. In case of a large fire as a result of the explosion contact Fire Department</li> <li>4. In the site camp, seal off exposed stormwater drains to ensure firewater does not cause any external contamination. If on site, take measures to prevent firewater entering any water body.</li> <li>5. Ensure that clean-up measures are taken if any contamination has occurred</li> <li>6. Record in emergency response record the: <ul style="list-style-type: none"> <li>• Nature of incident</li> <li>• Cause of incident</li> <li>• Clean up measures</li> <li>• Mitigation measures taken</li> </ul> </li> <li>7. Record in non-compliance register</li> <li>8. The ECO and Project Manager will determine if the event qualifies as an incident and take steps to report the incident to the necessary authorities i.e. DEA and DWS.</li> <li>9. The ECO shall review spill reports</li> </ol>
<b>Resource Requirements</b>	
<b>Materials</b>	<ul style="list-style-type: none"> <li>• Separate drums for contaminated soil.</li> <li>• Spade and clean soil</li> <li>• Fire equipment</li> </ul>

## Alien Plant Control Plan

Alien Plant Control Plan	
Activity	Site Mitigation Measures to control alien plants
Training and expertise of personnel involved in Alien plant management on site	<ul style="list-style-type: none"> <li>• It is rare that either a contractor has employees or members respectively with good knowledge of alien plants and their eradication, who can then eradicate these plants effectively and on a near-complete basis. Partial knowledge means that some alien species are missed or ignored or indigenous plants harmed. Partial work, or work that is not sustained is also ineffective in the long run as any residual presence can regenerate and expand quickly, particularly if live material or many seeds still in the ground.</li> <li>• As a result, the contractor must continually train their works as to the importance of alien plant control and at the same time providing them with the correct knowledge as to which plant must be removed and what method must take place.</li> </ul>
Alien Invasive Plant Management in construction area	<ul style="list-style-type: none"> <li>• The construction area must be kept free of alien invasive plants. Regular inspections of the site must take place. The following methods of alien plant control can be adapted: <ul style="list-style-type: none"> <li>○ Mechanical Control <ul style="list-style-type: none"> <li>▪ Hand pulling</li> <li>▪ Manual removal using hand tools</li> <li>▪ Manual removal using mechanised tools</li> </ul> </li> <li>○ Chemical Control <ul style="list-style-type: none"> <li>▪ Foliar spraying</li> <li>▪ Handheld spraying</li> <li>▪ High pressure spraying</li> </ul> </li> </ul> </li> <li>• The construction area must be rehabilitated immediately following the completion of construction to ensure that alien invasive plants do not become established.</li> <li>• The construction area must be regularly inspected following rehabilitation and alien invasive plants removed if they have become established.</li> </ul>
Responsible Use of herbicides	<ul style="list-style-type: none"> <li>• Problem plants in construction areas usually short-lived weeds for which mechanical methods alone are not successful some use of herbicides may be unavoidable. The following must be followed with the use of herbicides: <ul style="list-style-type: none"> <li>○ Do not spray herbicides in windy conditions</li> <li>○ Preferably spray in dry conditions and not prior to any predicted heavy rainfall as most pesticide movement either to the surface or to the groundwater will occur in the first major storm event after application. Heavy losses are reported when application occurs immediately before a major storm.</li> <li>○ A buffer zone which must remain untreated must be retained around any watercourse. A minimum buffer of 10m must be retained. This are will have to be managed by mechanical means.</li> <li>○ Empty containers or unused herbicides must be disposed of correctly and may not be dumped on site.</li> </ul> </li> </ul>

## Fauna and Flora on Site

Trees, shrubs and weeds recorded at the proposed project area.

Scientific Name	Common Name	Threat Status (SANBI, 2017)	Endemism Status (SA)	Alien Category
<i>Ageratum houstonianum</i>	Mexican Ageratum			NEMBA Category 1b
<i>Albizia adianthifolia</i>	Flat-crown	LC	Not Endemic	
<i>Aneilema aequinoctiale</i>	Idangabane Elikhulu	LC	Not Endemic	
<i>Asparagus falcatus</i>	Thorny Creeper	LC	Not Endemic	
<i>Asystasia gangetica</i>	Creeping foxglove	LC	Not Endemic	
<i>Bidens pilosa</i>	Blackjack			Naturalised Weed
<i>Brachylaena discolor</i>	Coastal Silver-oak	LC	Not Endemic	
<i>Carissa bispinosa</i>	Num-num	LC	Not Endemic	
<i>Carissa macrocarpa</i>	Big Num-num	LC	Not Endemic	
<i>Casuarina cunninghamiana</i>	Beefwood			NEMBA Category 2
<i>Catharanthus roseus</i>	Madagascar periwinkle			NEMBA Category 1b
<i>Commelina erecta</i>	Blouselblommetjie	LC	Not Endemic	
<i>Conyza bonariensis</i>	Hairy fleabane			Naturalised Weed
<i>Cynodon dactylon</i>	Bermuda Grass			NEMBA Category 1b
<i>Cyperus articulatus</i>	Jointed Flatsedge	LC	Not Endemic	
<i>Dactyloctenium australe</i>	Durban Grass	LC	Not Endemic	
<i>Dactyloctenium geminatum</i>		LC	Not Endemic	
<i>Desmodium incanum</i>	Creeping Beggerweed			Naturalised Weed
<i>Dichrostachys cinerea subsp. africana</i>	Sickle bush	LC	Not Endemic	
<i>Dracaena alectrifomis</i>	Large-leaved Dragon Tree	LC	Not Endemic	
<i>Erythrina humeana</i>	Dwarf Coral Tree	LC	Not Endemic	
<i>Ficus sur</i>	Cape Wild Fig	LC	Not Endemic	
<i>Kraussia floribunda</i>	Rhino-coffee	LC	Not Endemic	
<i>Ledebouria humifusa</i>		LC	Endemic	
<i>Microsporium scolopendria</i>	Monarch fern	LC	Not Endemic	
<i>Oplismenus hirtellus</i>	Bosgras	LC	Not Endemic	
<i>Oxalis semiloba</i>	Bolila	LC	Not Endemic	
<i>Phoenix reclinata</i>	Wild Date Palm	LC	Not Endemic	
<i>Richardia brasiliensis</i>	Mexican clover			Naturalised Weed
<i>Ricinus communis</i>	Castor-Oil Plant			NEMBA Category 2

<b><i>Senna septemtrionalis</i></b>	<b>Arsenic bush</b>			<b>NEMBA Category 1b</b>
<i>Sporobolus africanus</i>	Ratstail Dropseed	LC	Not Endemic	
<i>Stenotaphrum secundatum</i>	St. Augustine grass	LC	Not Endemic	
<i>Strelitzia nicolai</i>	Natal Wild Banana	LC	Not Endemic	
<b><i>Thevetia peruviana</i></b>	<b>Yellow oleander</b>			<b>NEMBA Category 1b</b>
<i>Trema orientalis</i>	Pigeonwood	LC	Not Endemic	
<i>Trichilia emetica</i>	Cape Mahogany	LC	Not Endemic	
<i>Vachellia kosiensis</i>	Dune Thorn	LC	Not Endemic	
<b><i>Verbena bonariensis</i></b>	<b>Tall Verbena</b>			<b>NEMBA Category 1b</b>

A list of avifaunal species recorded for the project area.

Species	Common Name	Conservation Status	
		Regional (SANBI, 2016)	IUCN (2017)
<i>Acridotheres tristis</i>	Myna, Common	Unlisted	LC
<i>Apalis thoracica</i>	Apalis, Bar-throated	Unlisted	LC
<i>Ardea melanocephala</i>	Heron, Black-headed	Unlisted	LC
<i>Centropus burchellii</i>	Coucal, Burchell's	Unlisted	Unlisted
<i>Cercomela familiaris</i>	Chat, Familiar	Unlisted	LC
<b><i>Ciconia episcopus</i></b>	<b>Stork, Woolly-necked</b>	<b>Unlisted</b>	<b>VU</b>
<i>Cossypha natalensis</i>	Robin-chat, Red-capped	Unlisted	LC
<i>Crithagra mozambicus</i>	Canary, Yellow-fronted	Unlisted	LC
<i>Cyanomitra veroxii</i>	Sunbird, Grey	LC	Unlisted
<i>Gallirex porphyreolophus</i>	Turaco, Purple-crested	Unlisted	LC
<i>Melaenornis pammelaina</i>	Flycatcher, Southern Black	Unlisted	LC
<i>Passer domesticus</i>	Sparrow, House	Unlisted	LC
<i>Ploceus capensis</i>	Weaver, Cape	Unlisted	LC
<i>Prinia subflava</i>	Prinia, Tawny-flanked	Unlisted	LC
<i>Pycnonotus tricolor</i>	Bulbul, Dark-capped	Unlisted	Unlisted
<i>Stactolaema leucotis</i>	Barbet, White-eared	Unlisted	LC
<i>Trachyphonus vaillantii</i>	Barbet, Crested	Unlisted	LC
<i>Zosterops virens</i>	White-eye, Cape	Unlisted	LC



Mammal species recorded in the project area.

Species	Common Name	Conservation Status	
		Regional (SANBI, 2016)	IUCN (2017)
<i>Chlorocebus pygerythrus</i>	Vervet Monkey	LC	LC

Invertebrates species recorded in the project area.

Species	Common Name
<i>Centrobolus sp</i>	Red Millipede
<i>Papilio demodocus</i>	Citrus Swallowtail
<i>Zononcerus elegans</i>	Elegant Grasshopper
	Snail