

Proposed Upgrade of Island View Seawalls in the Port of Durban Construction Environmental Management Programme

Report Prepared for

Transnet National Ports Authority



Report Number 511330/EMPr-02



Report Prepared by

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September 2018

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Transnet National Ports Authority

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September 2018

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Disclaimer

The opinions expressed in this Report have been based on the information supplied to SRK Consulting (South Africa) (Pty) Ltd (SRK) by PRDW Consulting Port and Coastal Engineers (PRDW) and Transnet National Port Authority (TNPA). The opinions in this Report are provided in response to a specific request from PRDW and TNPA. SRK has exercised all due care in reviewing the supplied information. Whilst SRK has compared key supplied data with expected values, the accuracy of the results and conclusions from the review are entirely reliant on the accuracy and completeness of the supplied data. SRK does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them. Opinions presented in this report apply to the site conditions and features as they existed at the time of SRK's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this Report, about which SRK had no prior knowledge nor had the opportunity to evaluate.

Acronyms and Abbreviations

CDP	Chart Datum Port
CEMPr	Construction Environmental Management Programme
CER	Contractor's Environmental Representative
CSIR	Council for Scientific and Industrial Research
DEA	Department of Environmental Affairs
DEA:O&C	Department of Environmental Affairs: Oceans and Coasts
EPCPD	Environmental Planning and Climate Protection Department
EO	Environmental Officer
FEL	Front End Loading
KZN	KwaZulu-Natal
KZNHA	KwaZulu-Natal Heritage Act, 1997 (Act No. 10 of 1997)
KZN PDA	KZN Planning and Development Act, 2008 (Act No. 6 of 2008)
MPRDA	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM: AQA	National Environmental Management: Air Quality Act, 2004 (Act. No. No 39 of 2004)
NEM: BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEM: ICMA	National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NEM: WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
PRDW	PRDW Consulting Port and Coastal Engineers
RP	Responsible Person
SDP	Supplier Development Plan
SRK	SRK Consulting (South Africa) (Pty) Ltd.
TNPA	Transnet National Ports Authority

1 Introduction

1.1 Background

The Port of Durban is the largest and best equipped container terminal in the southern hemisphere and is Africa's busiest port. Furthermore, it is South Africa's leading container, liquid bulk and vehicle port providing a variety of facilities including break bulk, a multi-purpose terminal, dry bulk, ship repair, naval facilities fishing, recreational activities and cruise liner docking. This port is of national importance as it services not only the local Durban and KwaZulu-Natal (KZN) hinterland but also Gauteng and the Southern African hinterlands.

The Port of Durban, in alignment with the National Ports Plan, has identified Island View for reconstruction and modernisation in order to address safety concerns and to sustain the national fuel import programme. The seawalls along the Island View basin are currently in a poor condition and are in desperate need of repairs and upgrading. Widening of the harbour entrance channel has resulted in increased wave energy which resulted in significant damage of the seawalls along the Island View basin. The proposed upgrades will improve the structural integrity of the seawalls and reduce the risk of damage to the infrastructure behind the seawalls. The proposed seawall upgrades are considered critical for the Island View terminals as this is a National Key Point area with Major Hazardous installations.

Transnet National Ports Authority (TNPA) has appointed PRDW Consulting Port and Coastal Engineers (PRDW) to undertake the FEL3 design to upgrade the seawalls along the Island View shoreline, including the installation of scour protection in certain areas. This Construction Environmental Management Programme (CEMPr), prepared by SRK Consulting (South Africa) (Pty) Ltd. (SRK) for PRDW, is for the construction phase of the project.

1.2 Content of the CEMPr

This CEMPr has incorporated the requirements of Appendix 4 of the Environmental Impact Assessment (EIA) Regulations (December 2014) promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA).

The content of the CEMPr, according to the requirements of the EIA Regulations is detailed in Table 1-1

Table 1-1: Content of the CEMPr

Information Required in terms of the Appendix 4 of the EIA Regulations – Content of CEMPr	Reference in the CEMPr (this report)
(1) (a) details of - (i) the EAP who prepared the CEMPr; and (ii) the expertise of that EAP to prepare an CEMPr, including a curriculum vitae	Section 1.4 and CV's in Appendix A
(b) a detailed description of the aspects of the activity that are covered by the CEMPr as identified by the project description;	Section 4
(c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Section 2
(d) a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including- (i) planning and design; (ii) pre-construction activities;	Section 4

Information Required in terms of the Appendix 4 of the EIA Regulations – Content of CEMPr	Reference in the CEMPr (this report)
(iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities;	
(f) a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraphs (d) will be achieved, and must, where applicable, include actions to – (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;	Section 6
(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 6
(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 6
(i) an indication of the persons who will be responsible for the implementation of the impact management actions;	Sections 5 and 6
(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 6
(k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 7
(l) a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 7
(m) an environmental awareness plan describing the manner in which- (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 8
(n) any specific information that may be required by the competent authority.	Not applicable
(2) Where a government notice gazetted by the Minister provides for a generic CEMPr, such generic CEMPr as indicated in such notice will apply.	Not applicable

1.3 General Objectives and Purpose of the CEMPr

The key objective of this CEMPr is to document appropriate actions and assign responsibility for those actions, to ensure that any impacts resulting from the upgrades of the seawalls are minimised and mitigated. By its very nature, the CEMPr is a dynamic document.

The purpose of this CEMPr is to:

- Outline TNPA environmental management commitments for the site during the construction phase.
- Ensure adherence to all relevant environmental legislation.
- Act as a performance standard that activities can be audited against.
- Ensure that appropriate monitoring is undertaken.
- Ensure that environmental management measures, structures or mechanisms are taken into account during the planning of seawalls and revetment upgrades.
- Ensure that relevant environmental management measures are clearly documented and understood by all relevant parties.

- Ensure that all activities are undertaken in a way that will minimise potential negative effects on the surrounding environment and maximise possible benefits.
- Ensure that suitable organisational, record keeping and reporting structures are put in place to monitor implementation of environmental management measures during all future repairs and maintenance activities.
- Ensure that the roles and responsibilities for management of various components are clearly defined.

TNPA is responsible for ensuring adherence to the conditions detailed in the CEMPr. The project manager and contractor(s), are all bound by the CEMPr and must use this document as a guide to avoid, minimise and manage environmental impacts.

1.4 Authors of the CEMPr

The CEMPr was prepared by the Environmental Departments of SRK Durban and Cape Town. SRK commenced its practice in 1974 and has been involved in a large number of environmental studies since that time.

Table 1-2 lists the core project team. *Curricula vitae* of the individuals listed are included in Appendix A.

Table 1-2: The core project team

Name	Position	Role	Years' experience
Christopher Dalgliesh CEAPSA	Project partner and quality reviewer	Review and quality assurance	25 years
Sharon Jones Pr. Sci. Nat / CEAPSA	Technical reviewer	Technical advice	19 years
Philippa Burmeister Pr. Sci. Nat.	Project manager	Project management and regulatory requirements	15 years
Tamaryn Hale CEAPSA	Project coordinator and Environmental Assessment Practitioner	Project co-ordination, reporting	10 years

1.5 Assumptions and Limitations

The limitations and assumptions applicable to this CEMPr include:

- TNPA will ensure implementation of the mitigation actions stipulated in Table 6-1 of this CEMPr by the appointed Contractors by making implementation of the CEMPr a condition in the contract.
- This CEMPr applies specifically to management of the impacts associated with the upgrade of the seawalls along the Island View Basin.
- The dredged material will be placed in scour holes in the Island View Basin. In the event that the scour holes cannot be utilised the Department of Environmental Affairs: Oceans and Coasts (DEA:O&C) will need to be consulted again before proceeding with an alternative disposal method.
- It is assumed that all land based operations will take place in previously disturbed areas and that no clearance of vegetation or disturbance of greenfield sites will be required.
- It is assumed that all marine based operations will take place in previously disturbed areas and all dredging will be considered maintenance dredging i.e. No capital dredging is proposed for this project. All dredging is within the limits of the current maintenance dredging operations.

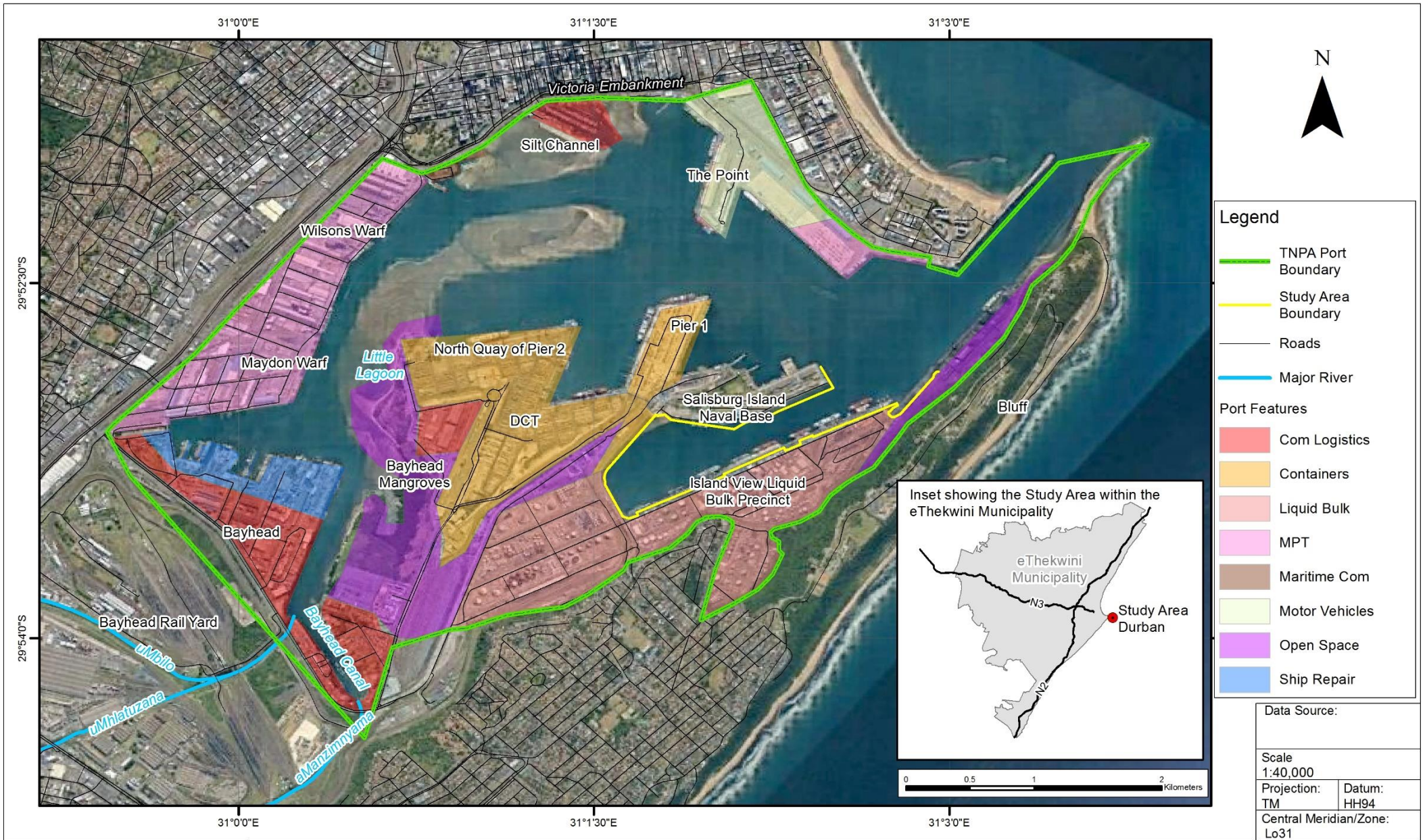
2 Scope of the CEMPr

2.1 Background

The Island View Complex (Island View), and study area for this project, is located on the southern side of the Port of Durban approximately 2.5km from the harbour mouth which is situated to the north-east. Island View stretches from the Port inner entrance channel, along the Bluff south quay walls and seawalls to the Island View quay walls and seawalls. It includes the Island View Berths 1 to 10, and extends along the causeway, past Berth 9 to Salisbury Island. The project area includes the entire shoreline around the Island View channel and turning basin. Refer to Figure 2-1 for the project area and extent of seawalls to be upgraded.

A Front End Loading (FEL) 2 Pre-Feasibility Study was undertaken by PRDW for this project, which identified the damaged seawalls and revetment areas that require immediate repair and upgrading. The FEL 2 study considered eleven (11) alternative solutions for repair and upgrading of the Island View seawalls, which were work-shopped with TNPA, following which it was unanimously agreed that rock revetments are the most appropriate, effective and the preferred method of protecting the Island View shoreline. Rock revetments are already extensively used as shoreline protection around the Island View terminal. The advantages of rock armour include; it is a very common and robust shoreline protection solution, it is cost effective when suitable rock material is available, it allows for movement and settlement, and it helps absorb wave energy.

PRDW have since been appointed to carry out the FEL 3 design and procurement documentation for the construction of the required rock revetment seawalls. This CEMPr has run concurrently with the FEL 3 design and will form part of the contract documentation for this work.

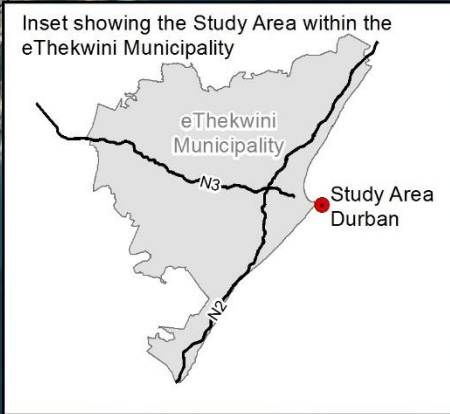


Legend

- TNPA Port Boundary
- Study Area Boundary
- Roads
- Major River

Port Features

- Com Logistics
- Containers
- Liquid Bulk
- MPT
- Maritime Com
- Motor Vehicles
- Open Space
- Ship Repair



ISLAND VIEW SEAWALLS AND REVETMENT UPGRADE
MAP SHOWING PROJECT AREA WITHIN THE PORT OF DURBAN

Data Source:	
Scale 1:40,000	
Projection: TM	Datum: HH94
Central Meridian/Zone: Lo31	
Date: 02/10/2017	Compiled by: STBOD
Project No. 511330	Fig No. 2-1
Revision: A 02/10/2017	

2.2 Upgrades and Extent of Development Footprint

Rock armour revetments are a common, efficient and reliable method of protecting shoreline slopes from wave attack and preventing erosion and undermining of landside infrastructure. A rock armour revetment consists of suitably sized and graded rock material designed for specific site conditions and design wave conditions expected at the site (see typical example of a rock revetment in Figure 2-2). They are robust structures that are flexible and can settle and move. Rock revetments have already been used along most of the Island View shoreline and between berths. The existing rock on these revetments is however generally too small for the increased wave conditions due to the Port entrance widening and therefore needs to be upgraded.

In certain areas between the berths, there is not sufficient space for a stable slope. Along these sections a steel sheet-pile wall will be installed to retain the bottom of the revetment slope. Scour rock will be placed seawards of the sheet-piles to prevent scour.



Figure 2-2: Example of a rock revetment

During the design stage, the areas that required repair and upgrading were identified and are shown in Figure 2-3. The scope of this project includes the full Island View shoreline slope from the crest level down to the Island view basin. Figure 2-4 shows the typical area of interest between the Island View berths. The seawalls are defined as the combined structures consisting of revetment, slope and sheet-piles (where required) together with sheet-pile scour protection. Neither the port footprint or the footprint of this developed area is expected to increase during the upgrade process. The area of the slope that is currently protected will generally extend into deeper water to prevent scour at the toe of the revetment and scour from propeller wash.

The revetment thickness will generally increase due to the larger armour rocks that are required. The landward footprint of the new revetment structure will not increase. The new revetment will however be placed over the existing seawall crest. Figure 2-5 shows a typical revetment section between the berths and one along the Salisbury Island shoreline. The typical section between the berths shows the

entire slope being protected by rock with a sheet-pile helping retain the revetment toe. Scour rock will be placed on the seaward side of the sheet-pile to prevent scour and undermining of the sheet-pile.

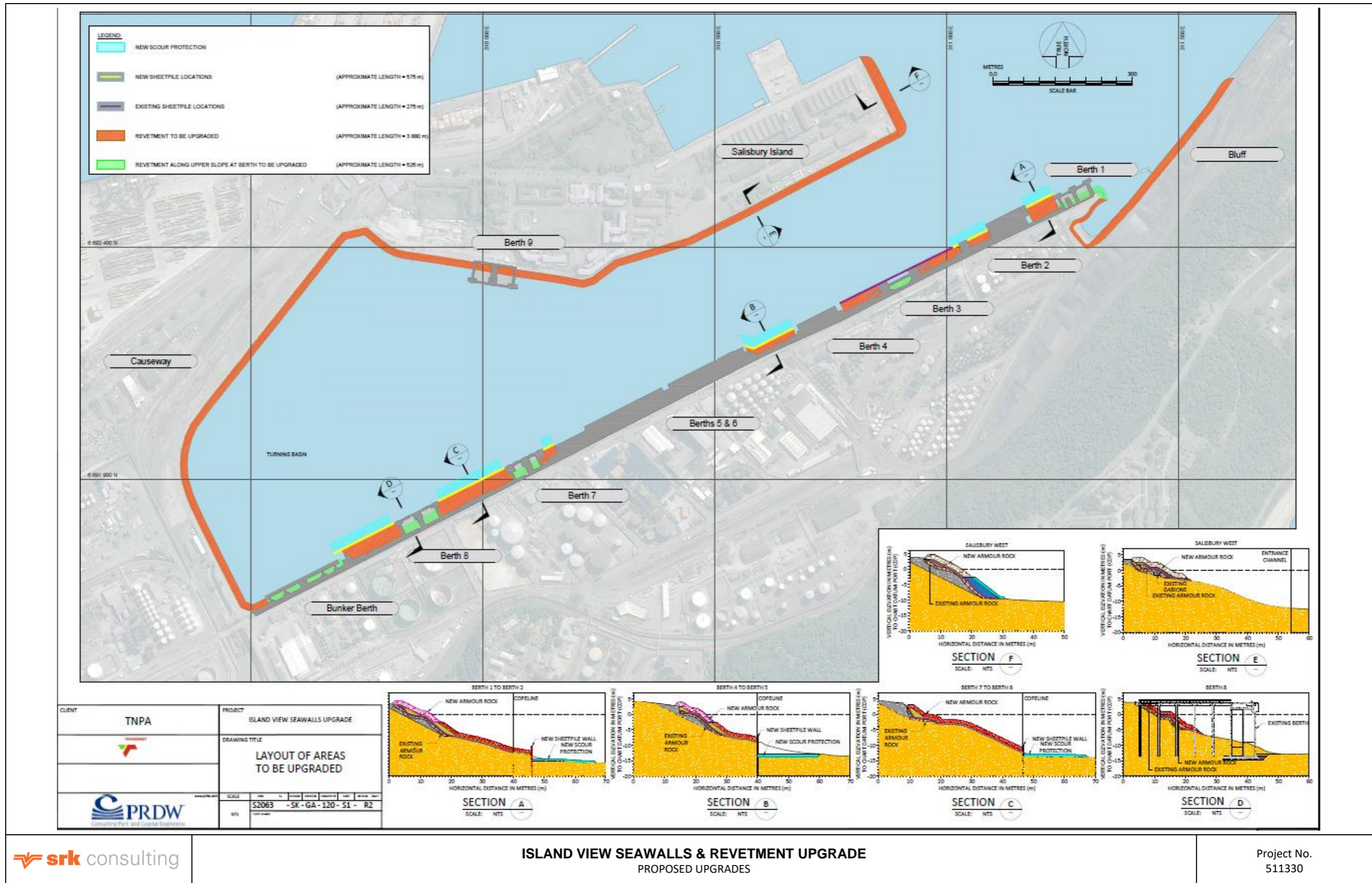


Figure 2-3: Proposed upgrades to the seawalls and revetments (refer to Appendix B for enlarged version)

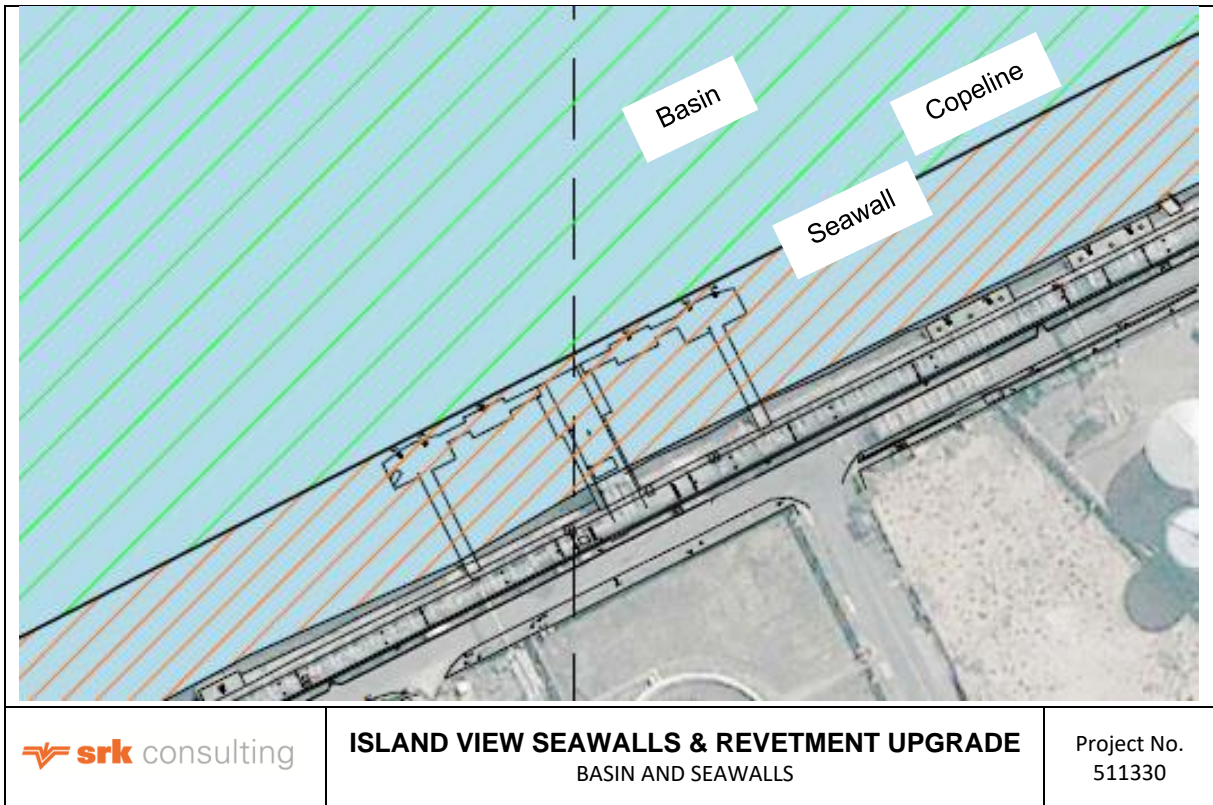


Figure 2-4: Basin and seawalls

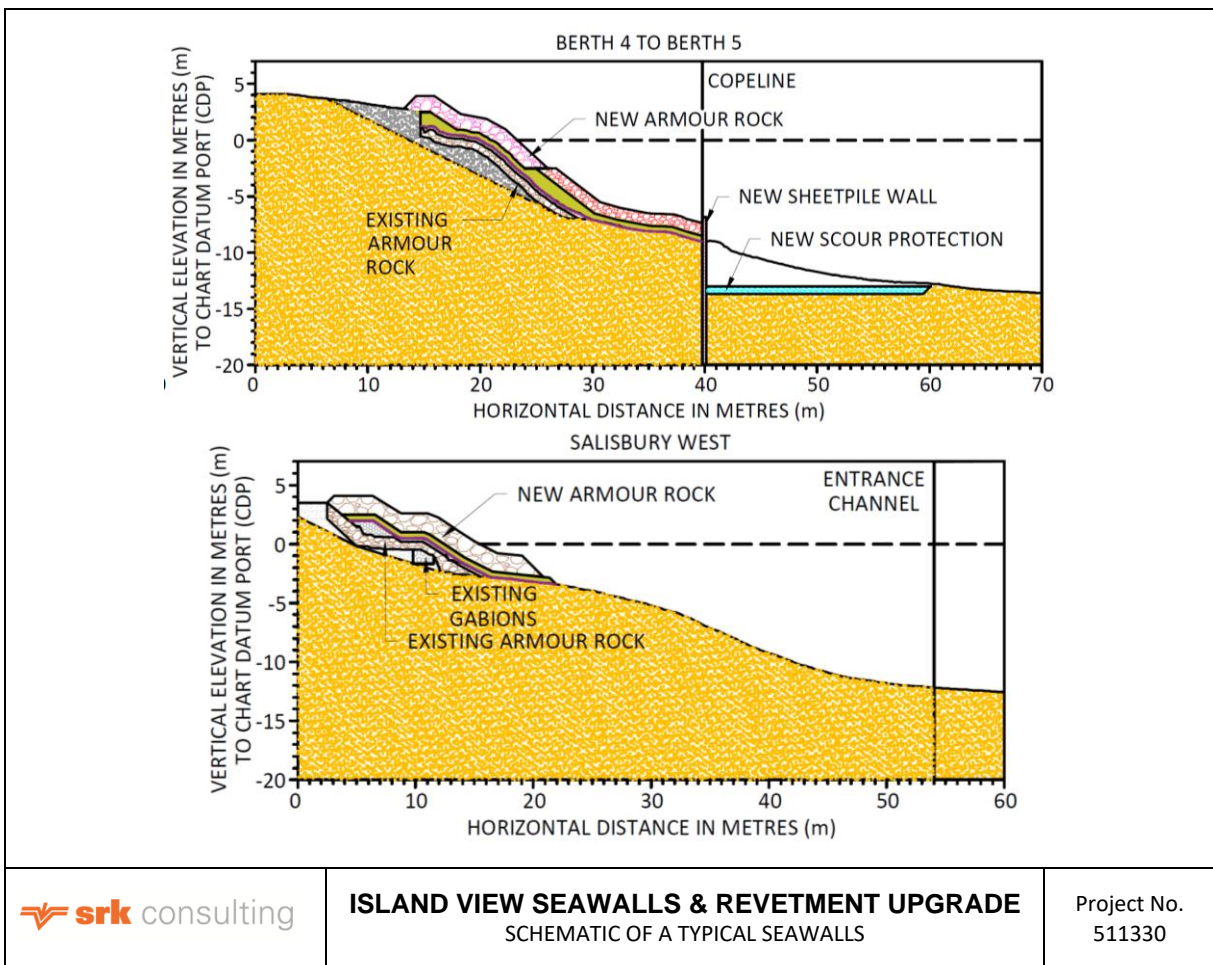


Figure 2-5: Schematic illustration of a typical revetment sections

The proposed works will all take place within the existing (developed) areas of the Port of Durban and adjacent marine environment. The presence of sensitive terrestrial and aquatic habitats within and surrounding the study area were determined based on existing datasets, the findings of which are presented in Table 2-1.

A review of existing biodiversity and conservation plans was undertaken to identify sensitive terrestrial and aquatic habitats. The review was undertaken primarily to determine whether this may have any implications with respect to permits and authorisations required, but also to inform the need for environmental management during construction. Based on a legal review and as confirmed by the national Department of Environmental Affairs (DEA) the study area does not require any Environmental Authorisation and/or permits relating to the aquatic and terrestrial habitats.

Table 2-1: Presence of sensitive terrestrial and aquatic habitats

Dataset	Study Area	Surrounds
eThekweni Municipality D'MOSS	Entire aquatic area of the Port of Durban is classified as 'Estuary'	No other open space zones directly adjacent to the study area
Ezemvelo KZN Wildlife TSCP	100% transformed	Biodiversity Priority Area 1 along southern boundary of study area
SANBI National Biodiversity Assessment: Terrestrial Habitats	Entire Port of Durban and terrestrial habitats in the surrounding areas are classified as critically endangered	
National Freshwater Ecosystem Priority Area (NFEPA)	Entire Durban bay classified as a National Freshwater Ecosystem Priority Area	
1: 100 year floodlines	Outside 1: 100 year floodlines of three major rivers feeding the Durban bay	

2.3 Construction Method

The method of constructing the revetments will be a combination of land and marine based techniques. Where there is landside access, such as at the Bluff, mole and causeway, land based equipment will be used to construct a revetment along the shoreline and to approximately 20m seaward of the shore edge and to a depth of approximately - 5m CDP. Where revetments extend beyond the reach of land based equipment, marine based techniques will be used such as along Island View Berths 1 to the Bunker Berth (Figure 2-6).

The bottom of the revetments, between the berths may not extend beyond the berth cope line so as not to encroach on the navigational area. Therefore a sheet-pile is required, in a number of areas, along the base/toe of the revetment to retain and stabilise the slopes and allow for dredging the basin to the required depth up to the berth cope line. Once the sheet-piles have been installed the seaward side of them will be dredged to the advertised depth which ranges from between -10 m and -14.5 m CDP. Scour rock will be placed seawards of the sheet-piles to prevent scouring and potential compromising of the sheet-pile wall. The required dredging/excavation in front of the sheet-piles falls within the maintenance dredging tolerances depths.

For the landside construction method, roadworthy dump trucks will be used to transport filter and armour rock to areas that have road access. The rock will be placed directly onto the revetment or stockpiled adjacent to the working area for placing latter on. A land-based excavator will then be used to place and shape the revetment filter layer and armour layer. A long reach excavator will be used to reach the further and lower sections of the revetment.

All land based operations will take place in previously disturbed areas and no clearance of vegetation or disturbance of greenfield sites will be required. Similarly, all marine based operations will take place in previously disturbed areas. All dredging will be considered maintenance dredging and will be within the depths and tolerances of the current maintenance dredging operations.

The construction phase does not require or include the construction of infrastructure for utilities such as water supply, electricity or access roads. There are some existing storm water outlets along the seawalls that will be integrated into the revetment structure.

The typical construction sequence of the revetments between the Island View berths revetment will be undertaken as follows:

- a) Temporary decommissioning of the adjacent berth.
- b) Where required, install sheet-piles along the bottom of the slope, just landward of the berth cope alignment. The sheet-piles will be installed from floating plant i.e. a barge.
- c) Dredge/excavate the sandy/clayey material in front of the sheet-piles down to the required basin depth. The volume of the material that needs to be dredged/excavated is between 20,000m³ to 25,000m³ and it will be placed in the adjacent scour holes in the Island view basin.
- d) Place rack scour protection in front of the sheet-pile wall.
- e) Trim and slope profile where required and prepare the slope for the new rock revetment. The rat-proofing (grouted packed stones) are to be broken up to provide a porous and higher friction surface.
- f) Place a geotextile on the prepared slope.
- g) Filter and armour rock will be transported to and stockpiled on site. Rock will be loaded onto barges or hopper barges at the Westerly Berth 9 mooring dolphin. The barges will transport rock to the construction areas. The rock will be bottom dumped and profiled with excavators, alternatively an excavator will be used to unload the barge and place and profile rock on the slope. The revetment will be built up from the bottom up.

2.4 Utilisation/Disposal of Dredged Material

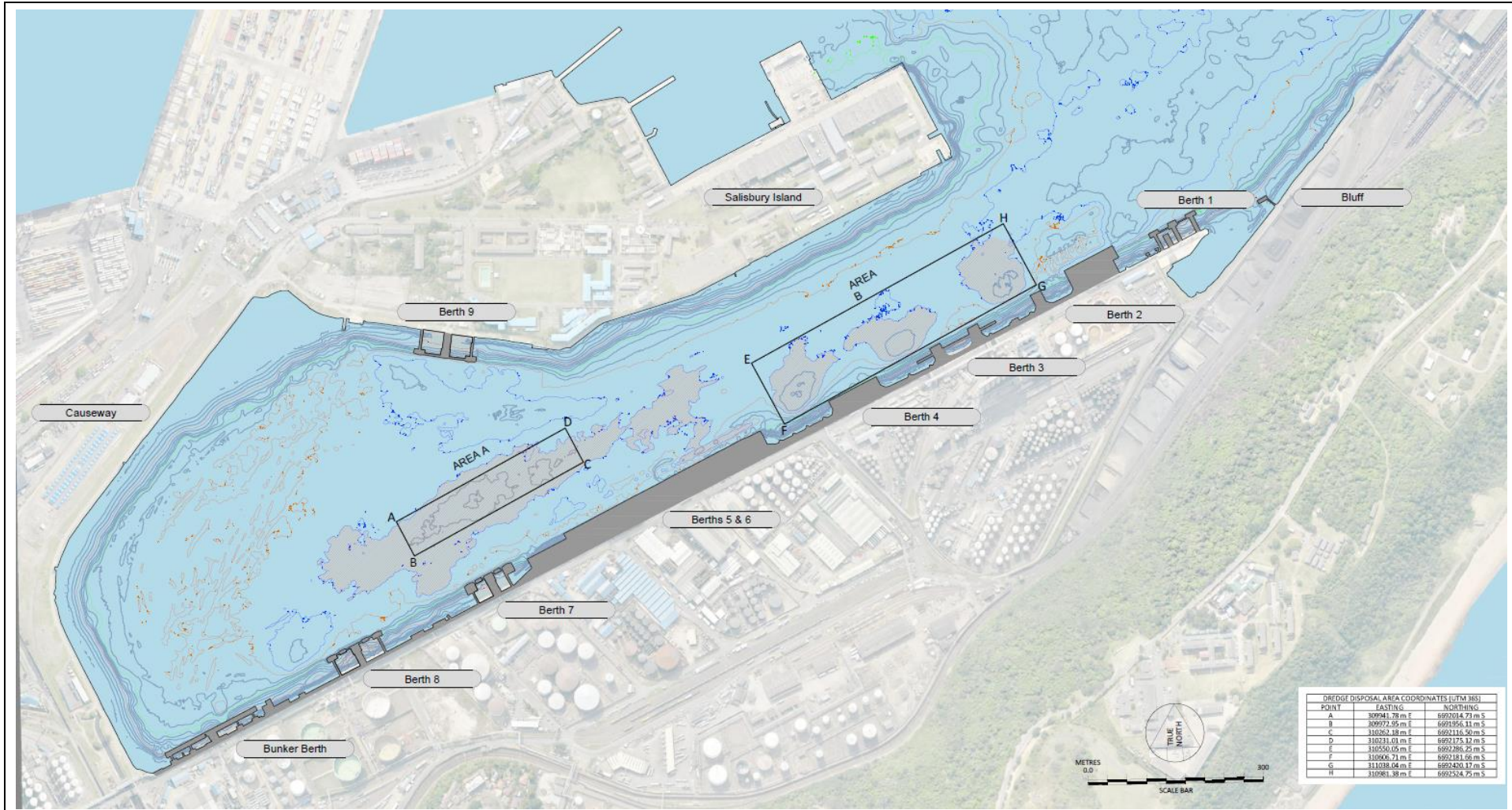
The volume of the material that needs to be dredged/excavated during this project is between 20,000m³ to 25,000m³. Various options for the utilisation or disposal of the dredged material were identified and considered. These include:

- Beneficial use (to fill scour holes inside the port).
- Disposal on land.
- Disposal or temporary storage in the port basin. To be removed during future Port maintenance dredging.
- Disposal at sea at TNPA's existing maintenance dredging disposal site.

It was agreed that the most efficient and beneficial use of this material will be to place it in scour holes in the Island View Basin (refer to Figure 2-6) adjacent to the works. This will help reduce the risks of slopes and/or berth structures being undermined due to the excessive scour depths adjacent to the slopes and structures. The volume of material that can be accommodated in areas A and B in Figure 2-6, below the -13.5m CDP level, is approximately 65,000 m³. This is two to three times more than the expected dredge volumes. This option was also preferred by the DEA:O&C, as this will be a beneficial use of the material and it eliminates the need for disposal and, thus, acquisition of a Dumping at Sea Permit.

Neither disposal on land nor disposal at sea were considered feasible options given the relatively small volumes of material that need to be dredged.

Based on CSIR monitoring studies during 2016 and 2017, it is anticipated that the dredge material will not be contaminated and that it is suitable for disposal in the existing Island View basin scour holes.



ISLAND VIEW SEAWALLS & REVETMENT UPGRADE
 OPTIONS FOR STORAGE OF DREDGE SPOIL (Shaded areas are below -14m CDP)

Project No.
511330

Figure 2-6: Options for the storage of dredge spoil in the Island View basin

3 Legal Framework

A legal review of the following key legislation regulating environmental matters in relation to development projects (i.e. where environmental authorisations, permits or licences may be required) was undertaken:

- National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and the associated EIA Regulations.
- National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008) (NEM: ICMA).
- National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA).
- KZN Planning and Development Act, 2008 (Act No. 6 of 2008) (PDA).
- National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM: WA).
- National Environmental Management: Air Quality Act, 2004 (Act No. No 39 of 2004) (NEM: AQA).
- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEM: BA).
- National Water Act, 1998 (Act No. 36 of 1998) (NWA).
- Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA).
- KwaZulu-Natal Heritage Act, 1997 (Act No. 10 of 1997) (KZNHA).

The following conclusions were made based on the legal review:

- a) Based on the fact that the proposed activities take place inside an existing Port, do not increase the development footprint of the Port, and a setback for the Port has not been defined, no Environmental Authorisation is required for this project.
- b) Although the project requires dredging of a small volume of material to reach the advertised depth along the copeline and facilitate seawalls upgrades, and the option of disposing of the dredged material at the existing marine disposal site was considered, TNPA has taken the decision not to dump the dredged material at sea due to the small volumes, but rather utilise it in the basin. Therefore, a dumping at sea permit will not be required, as confirmed by the DEA: Oceans and Coasts (DEA:O&C) in a meeting held on 27 November 2017 (refer to Appendix C for the minutes of the meeting).
- c) Based on the age of some structures requiring upgrade (over 60 years) and the extent of the area to be dredged and scour holes filled, a heritage permit is required. An application to the South African Heritage Resources Agency (SAHRA) has been submitted and a decision is still pending.
- d) As the project area falls within Durban's Metropolitan Open Space System (D'MOSS), the eThekweni Municipality: Environmental Planning and Climate Protection Department (EPCPD) was consulted regarding the need for any additional permits or applications. The EPCPD confirmed that it had no concerns regarding the proposed project from a biodiversity perspective, but advised that TNPA would need to consult with the town planning department for building approvals.

4 Potential Impacts and Outcomes on Receiving Environment

The main environmental aspects associated with the site that require management during the proposed upgrade of the seawalls and revetments are summarised in Table 4-1. While the significance of the potential impacts of the proposed works depends largely on the sensitivity of the receiving environment (in this case a functional harbour and thus a substantially disturbed environment), there is value in understanding the nature of potential negative impacts as context for the detailed mitigation measures presented in Section 6.

Note that while the description of the potential impacts of the project presented in Table 4-1 includes impacts associated with maintenance dredging and the placement of dredged material in scour holes, management of impacts associated with these activities will be in terms of TNPA's EMP for dredging operations in the Port of Durban (refer to Appendix D for the dredging EMP) , and for consistency, additional mitigation measures associated with these activities are excluded from this CEMPr. It should further be noted that some of the key outcomes listed below have already been addressed during the project design phase, but have been included to present a comprehensive overview of the impacts considered.

Table 4-1: Potential impacts and outcomes for the proposed upgrade of the seawalls and revetments at Island View

Aspect	Potential Impact	Description of Impact at Island View	Key outcomes
Dredging and placement of dredged material	Disturbance of marine habitat within the footprint of proposed dredging and placement of sediment in scour holes	Any benthic marine biota within the footprint of (or directly adjacent to) the proposed dredging activities will be removed, disturbed or smothered. Given that the scope of works covered by this CEMPr is limited to maintenance dredging and placement of material within scour holes within the existing (previously dredged) harbour basin) it is expected that these habitats would previously have been significantly disturbed during harbour construction, previous maintenance activities and ongoing use. As such marine biodiversity is expected to be low and unlikely to include sensitive marine habitats. It should also be noted that sandy marine habitats (such as beaches) are adapted to recover quickly from disturbance since these coastal systems naturally undergo regular erosion and accretion events.	Define dredge volumes and determine dredging frequencies to inform disposal requirements
	Nutrient release and associated algal blooms	Dredging and placement of dredged material activities may release nutrients trapped in the dredged sediments, increasing nutrient levels in the water column and potentially leading to algal blooms. This may affect water quality and surrounding water users. Studies by the CSIR indicate that nutrient levels in the water in the Port varies substantially, largely due to inflows for surrounding urban areas.	Sampling and characterisation of sediments during dredging to determine safest placement of dredged material option
	Liberation of trace metals and other contaminants in dredged sediment, affecting marine life	Contaminants in sediments could be released into the water column during dredging and placement of dredged material, potentially affecting marine biota and other water users in the area. The CSIR have reported that high concentrations of metals have been found in mussels in the Island View basin, which may be indicative of high metal concentrations in the sediment. The release of contaminants into the	

Aspect	Potential Impact	Description of Impact at Island View	Key outcomes
		water column during dredging may affect water quality and surrounding water users such as Ushaka Marine World that pump water from the harbour	
	Elevated turbidity and sedimentation in surrounding habitat	Dredging and placement of dredged material will result in the suspension of sediments in the water column, with potential impacts on marine ecology or other water users in the area (e.g. aquaculture activities). In an existing harbour environment the increased turbidity and sedimentation levels will be contained inside the harbour boundaries where marine life has already been disturbed in the past, and is therefore unlikely to include sensitive marine habitats.	Monitor turbidity and sedimentation during dredging
	Visual impact of dredging activities	Dredge plumes (sediment suspended in the water column) will be visible on the surface and may have a visual impact, if viewed from an elevated location. Assuming dredging and placement of dredged material activities are relatively limited, dredge plumes are likely to be small and present for only a short period. The significance of the impact is expected to be limited given the location within an operational harbour rather than a natural landscape.	Minimise visual impacts of dredging on visual receptors
	Compromised safety of users of the harbour	The dredging activities to be undertaken will involve use of heavy machinery and may compromise the safety of other users of the harbour if not adequately communicated and managed.	Ensure the safety of users of the harbour is not compromised
	Accidental releaser/ discharge of contaminants, such as oil during marine works	Contaminants released into the water column during marine works could affect marine biota and other water users in the area. Although the likelihood of sensitive environments/users inside the harbour are extremely low, an uncontrolled spill could spread beyond the work areas rapidly with detrimental effects outside the harbour if not adequately prevented and managed (e.g. through the implementation of an oil spill contingency plan)	
Increased noise levels	Higher noise levels during construction could adversely affecting surrounding landowners, tenants and residents	Increased noise levels may be generated by construction vehicles and equipment and dredging activities (depending on the dredging methodology). The level of disturbance experienced by surrounding communities will depend on emitted noise levels, ambient noise levels in the area, the nature of surrounding land uses as well as the proximity of sensitive receptors. Although the closest residential areas, such as Fynnlands and Ocean View are in close proximity (approximately 300 m) to the Island View basin, ambient noise levels are already likely to be high given the proximity to the port and railway line passing between the port and these communities.	Ensure noise levels are within reasonable limits.
Increased emissions	Increased emissions during construction adversely affecting air quality	Emissions from construction vehicles and, potentially, dust generated by vehicle movements or the handling of materials could affect the local air quality temporarily. The impact on surrounding communities will once again be determined by the proximity of sensitive receptors to the area in which works will be undertaken and local wind conditions.	Ensure dust management measures are in place to reduce dust emissions

Aspect	Potential Impact	Description of Impact at Island View	Key outcomes
		The closest residential areas are situated approximately 300 m from the Island View basin.	
Poor waste, effluent, waste water and hazardous material management	Release/ discharge of contaminants from poor waste, effluent, and hazardous materials management during construction, affecting marine life	Contaminants released into the water column during construction activities could affect marine biota and other water users in the area.	Ensure efficient and effective waste, effluent, waste water and hazardous materials management procedures are in place.
	Release/ discharge of contaminants from concrete/ cement spills during construction, affecting marine life		
Protection of Heritage Resources	Loss or disturbance of cultural heritage resources	Loss or disturbance of cultural heritage resources could occur due to disturbance of material (including wrecks) of archaeological or heritage value of structures older than 60 years. The terrestrial and marine portions of the site have been significantly disturbed by previous development, and dredging operations, and it is thus extremely unlikely that any material of archaeological value would be encountered. Some of the structures to be upgraded at island View are older than 60 years.	Ensure legal compliance for identified heritage resources Limit disturbance and damage to heritage resources identified during construction
	Increased employment, income and skills development	Although the duration of repair and maintenance works is likely to be relatively short, opportunities exist for local employment, skills development and support of local industries with positive impacts on the local economy. Allowance for this is made in TNPA's SDP policy.	Encourage the use of local contractors and staff and sourcing of materials from local suppliers where relevant skills and resources are available.
General environmental management	Marine and terrestrial environmental degradation, damage and/or destruction	Lack of consideration of the potential environmental impacts of the project in the planning and construction phases could cause marine and terrestrial environmental degradation, damage and/or destruction	Ensure environmental considerations are factored into all spheres of the project

5 Roles and Responsibilities

The key role players during the upgrades are anticipated to be as follows:

- Proponent (TNPA), where relevant represented by their Implementing Agent.
- Engineer / Responsible Person (RP), who will oversee the activities of the contractors on site.
- Environmental Officer (EO). This role will be fulfilled by TNPA’s environmental specialist who has oversight of all works in the harbour from an environmental perspective.
- Contractors responsible for the maintenance and repair activities.
- Any Sub-contractors hired by the contractor.

The anticipated management structure (organogram) is presented in Figure 5-1 and shows the proposed lines of communication for the duration of the construction phase of the project. TNPA retains overall responsibility for maintenance and the implementation of the CEMPr.

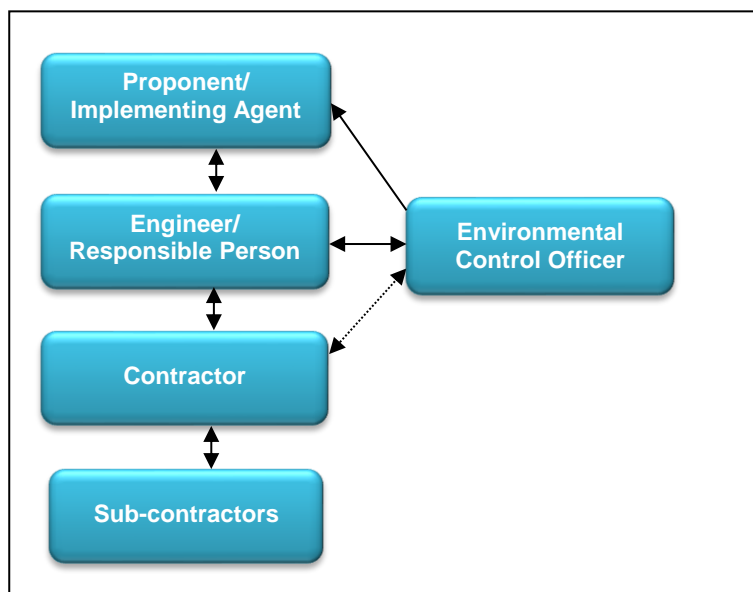


Figure 5-1: Reporting structure

Key roles and responsibilities with respect to the implementation of the CEMPr are outlined below.

Responsible agent	Roles / responsibilities
Proponent (TNPA)	TNPA (through their Implementing Agent if applicable) has overall responsibility for management of upgrade activities. In terms of environmental management, the Proponent will: <ul style="list-style-type: none"> • Appoint suitably experienced Engineers, if required, who will be responsible for the overall management of activities on site. • Identify any activities not covered by the scope of this CEMPr, and determine the need for, and where required, obtain relevant authorisations. • Ensure that the Engineers are aware of the requirements of the CEMPr, implement the CEMPr and monitor the Contractor’s activities on site. • Ensure that the Contractor is aware of and contractually bound to the provisions of this CEMPr by including the relevant environmental management requirements in tender and contract documents, as appropriate. • Appoint/designate a suitably qualified and experienced EO/internal environmental specialists to oversee environmental management of the required works. • Ensure that the Contractor remedies environmental problems timeously and to the satisfaction of the Engineer and authorities (when necessary). • Notify the authorities should problems not be remedied timeously.

Responsible agent	Roles / responsibilities
Engineer/ Responsible Person	<p>TNPA will appoint suitably qualified Engineers, who in turn will designate a responsible person (RP) to oversee activities of the Contractor. This role will be fulfilled by the Resident Engineer. The RP shall:</p> <ul style="list-style-type: none"> • Ensure that the Contractor is duly informed of the CEMPr and associated responsibilities and implications of this CEMPr prior to commencement of site activities. • Identify the need for, and request/provide Method Statements for future maintenance and repair works. • Monitor the Contractor's activities with regard to the requirements outlined in the CEMPr. • Report any environmental emergencies/concerns to the TNPA immediately. • Ensure that any non-compliance is remedied timeously and to the satisfaction of the relevant authorities.
Environmental Officer	<p>The EO shall be a suitably qualified/experienced individual designated by TNPA to have environmental oversight for the duration of repair or maintenance works. The EO shall:</p> <ul style="list-style-type: none"> • Request Method Statements from the Contractor prior to the start of relevant activities, where required, and approve these (as appropriate) without causing undue delay. • Monitor, review and verify compliance with the CEMPr by the main Contractor, as well as any sub-contractors and specialist contractors. • Undertake site inspections at least twice a month to assess compliance with the CEMPr. • Identify areas of non-compliance and recommend corrective actions (measures) to rectify them in consultation with TNPA, the RP and the Contractor, as required. • Compile a checklist highlighting areas of non-compliance following each EO inspection. • Ensure follow-up and resolution of all non-compliances. • Provide feedback for continual improvement in environmental performance. • Respond to changes in project implementation or unanticipated activities which are not addressed in the CEMPr, and which could potentially have environmental impacts, and advise TNPA, the RP and Contractor as required. • Undertake a site closure inspection, which may result in recommendations for additional clean-up and rehabilitation measures.
Contractor	<p>The Contractor will be required to appoint or designate a Contractor's Environmental Representative (CER) who will assume responsibility for the Contractor's environmental management requirements on site and be the point of contact between the Contractor, the EO and the RP. The CER shall:</p> <ul style="list-style-type: none"> • Ensure that all activities on site are undertaken in accordance with the CEMPr and /or an approved Method Statement. • Monitor the Contractor's activities with regard to the requirements outlined in the CEMPr. • Ensure that all employees and Sub-contractors comply with the CEMPr. • Immediately notify the RP and EO of any non-compliance with the CEMPr, or any other issues of environmental concern. • Ensure that non-compliance is remedied timeously and to the satisfaction of the RP and EO. • The Contractor has a duty to demonstrate respect and care for the environment. The Contractor will be responsible for the cost of rehabilitation of any environmental damage that may result from non-compliance with the CEMPr, environmental regulations and relevant legislation.
Sub-contractors	<p>All Sub-contractors will be required to:</p> <ul style="list-style-type: none"> • Ensure that all employees are duly and timeously informed of the CEMPr and associated responsibilities and implications of this CEMPr. • Ensure that all activities on site are undertaken in accordance with the CEMPr. • Monitor employees' activities with regard to the requirements outlined in the CEMPr.

Responsible agent	Roles / responsibilities
	<ul style="list-style-type: none"> • Immediately notify the RP and EO of any non-compliance with the CEMPr, or any other issues of environmental concern. • Ensure that non-compliance is remedied timeously and to the satisfaction of the RP and EO. • The Sub-contractor has a duty to demonstrate respect and care for the environment. The Sub-contractor will be responsible for the cost of rehabilitation of any environmental damage that may result from non-compliance with the CEMPr, environmental regulations and relevant legislation, resulting from their presence on site.

6 Environmental Management and Mitigation Measures (Actions)

The environmental management and mitigation actions that must be implemented to achieve the outcomes identified in Section 4, as well as responsibilities and timelines for the implementation of these measures and monitoring thereof, are detailed in Table 6-1. Note that environmental management requirements for dredging and the placement of dredged material into scour holes will be as per TNPA's EMP for dredging operations in the Port of Durban and detailed mitigation measures are thus not provided below.

Table 6-1: Environmental management and mitigation actions that must be implemented for the planning and construction phases to ensure the desired outcomes are achieved

Outcome	ID	Mitigation measure / Procedure	Responsible	Implementation Timeframe	Monitoring Methods	Performance Indicators
Ensure procedures are in place to manage a potential oil spill during dredging and disposal.	1.	Update any relevant oil spill contingency plan or develop a new oil spill contingency plan to be implemented in the event of an oil spill during marine construction. (See Appendix E)	Contractor	Prior to dredging activities	Submission of oil spill contingency plan to EO for approval or comment	Approved oil spill contingency plan
	2.	Include the use of physical containment or recovery equipment including a variety of booms, barriers, and skimmers, as well as natural and synthetic sorbent materials in the case of a spill, as well as the use of sorbent materials in the final stages of clean up.				
Ensure noise levels are within reasonable limits	3.	Limit noisy activities to day-time from Monday to Friday or in accordance with relevant municipal bylaws, if applicable, where sensitive receptors are located close to the proposed works.	Contractor	Throughout activities	Site inspections	Number of registered complaints
	4.	Comply with the applicable municipal and / or industry noise regulations.				
	5.	Notify adjacent residents before particularly noisy activities will take place.				
	6.	Maintain (offsite) all generators, vehicles and other equipment in good working order to minimise exhaust fumes and excess noise.				
	7.	If complaints regarding noise are received, investigate potential noise reduction measures such as mufflers on equipment.				

Outcome	ID	Mitigation measure / Procedure	Responsible	Implementation Timeframe	Monitoring Methods	Performance Indicators
Ensure dust management measures are in place to reduce dust emissions	8.	Avoid activities that may generate dust (e.g. handling or stockpiling of material) during particularly windy conditions i.e when there is a visible dust plume.	Contractor	Throughout activities	Keep record of incidents and complaints Observation of dust plumes	Number of incidents and complaints
	9.	If dust emissions are a problem then cover stockpiles with shade cloth or similar material to prevent windblown dust.				
Ensure efficient and effective waste management procedures are in place	10.	Ensure that no litter and debris reaches the marine environment during construction activities. Should this occur, remove such waste/litter from the marine environment immediately.	Contractor	Throughout activities	Visual inspection of waste collection areas Visual inspection of construction areas (litter) Check waste disposal slips	Presence of litter Availability of rubbish bins Frequency at which rubbish bins are emptied
	11.	Train all staff of the effects of debris and litter in the marine environment and appropriate disposal procedures.				
	12.	Ensure that waste material is not placed where it may be exposed to storm water.				
	13.	Prevent littering by staff at work sites by providing bins or waste bags in sufficient locations.				
	14.	Provide separate bins/waste bags for hazardous / polluting materials and mark these clearly.				
	15.	Remove hazardous / polluting materials from the site at regular intervals and dispose of these materials at a licensed waste disposal facility with a Class appropriate to the type of waste being disposed of.				
	16.	Prohibit any burning or burying of waste on site or at sea.				
17.	Where existing waste in the surrounding area is not well managed, this should be recorded by the Contractor and reported to relevant TNPA official to ensure that it is addressed in terms of TNPA's Operational Management Plan for the harbour and does not become the responsibility of the Contractor.					

Outcome	ID	Mitigation measure / Procedure	Responsible	Implementation Timeframe	Monitoring Methods	Performance Indicators
Ensure efficient and effective effluent and waste water management procedures are in place	18.	Prevent discharge of any pollutants, such as cement, concrete, lime, chemicals, and hydrocarbons into watercourses or the sea.	Contractor	Throughout activities	Visual inspections	Containment of all potentially polluted run-off. Register of suitable disposal of contaminated water from containment basins. Register of suitable disposal of hopper and spud barge waste.
	19.	Direct run-off from areas with a high risk of accidental releases of oil or hazardous materials (e.g. fuelling or fuel transfer locations, truck washing bays, concrete swills etc.) into containment basins or conservancy tanks and dispose of contaminated water at an approved (hazardous) waste disposal site.				
	20.	Prevent illegal washing out of containers in or discharge of wash water or any other contaminated water for the site into water bodies (including stormwater systems, rivers/streams and the sea).				
	21.	Do not dispose of any material of any kind in the sea at any time and under any circumstances. Any person that is deemed to have authorised, supervised, instructed, permitted or carried out such an act, shall be permanently removed from site.				
	22.	All waste and effluent from the hopper and spud barges to be appropriately disposed on land.				
Ensure all concrete/cement required on site is appropriately managed to avoid/minimise spillages	23.	Batch cement (where unavoidable on site) in a bunded area on mortar boards and not directly on the ground (unless in a paved area and approved by the EO).	Contractor	Throughout activities	Visual inspection and approval by EO.	Number of incidents of batching outside bunded area Contamination of water and soil Visible litter / waste on site Register of disposal of excess material.
	24.	Physically remove any remains of concrete, either solid, or liquid, immediately and dispose of as waste.				
	25.	Place cement bags in bins and dispose of bags as waste to a licensed waste disposal facility.				
	26.	Sweep / rake / stack excess aggregate / stone chip / gravel / pavers into piles and dispose at a licensed waste disposal facility.				

Outcome	ID	Mitigation measure / Procedure	Responsible	Implementation Timeframe	Monitoring Methods	Performance Indicators
Ensure efficient and effective hazardous materials management procedures are in place	27.	Locate temporary hazardous material storage facilities on an impermeable surface as far as practically possible from the water's edge.	Contractor	Throughout activities	Visual inspection of hazardous materials handling and storage areas	Number of incidents of non-compliance with safety procedures concerning hazardous materials, including waste materials Number of spills of hazardous materials, including waste materials Cost of cleaning up spills Evidence of contamination and leaks
	28.	Ensure that contaminants (including cement) are not placed directly on the ground (e.g. mix cement on plastic sheeting) to prevent runoff reaching the marine environment.				
	29.	Develop (or adapt and implement) procedures for the safe transport, handling and storage of potential pollutants.				
	30.	Avoid unnecessary use and transport of hazardous substances.				
	31.	Keep Material Safety Data Sheets (MSDS) for all hazardous materials on site and ensure that they are available for reference by staff responsible for handling and storage of materials.				
Follow appropriate procedures to ensure identified heritage resources are protected	32.	Submit permit applications to SAHRA via South African Heritage Resources Information System (SAHRIS) for any proposed works to structures known or suspected to be older than 60 years, and for any disturbance of maritime or underwater cultural heritage resources.	TNPA	Prior to commencement of construction activities	Submission on SAHRIS portal	Permit from SAHRA to commence with works
Limit disturbance and damage to heritage resources identified during construction	33.	Report all exposed marine/terrestrial heritage resources to SAHRA. Heritage resources uncovered/disturbed must not be disturbed further until advice has been obtained from the relevant heritage authority on how they should be dealt with.	Contractor and RP	When potential remains exposed	Photographs of find. Visual inspections of excavations.	Records of correspondence
	34.	Ensure that all Contractors and Sub-contractors are made aware of the potential existence of heritage resources (terrestrial and marine), and are instructed on the correct procedure for preserving the integrity thereof.	Contractor/EO	Before construction activities commence	Attendance registers of awareness sessions.	Register of all workers that completed the awareness session
Development of local contractors and staff	35.	Encourage the use of local contractors and staff and sourcing of materials from local suppliers where relevant skills and resources are available.	Contractor	Before construction activities commence	-	-

Outcome	ID	Mitigation measure / Procedure	Responsible	Implementation Timeframe	Monitoring Methods	Performance Indicators
Ensure that adequate resources are allocated to environmental management by the Contractor	36.	Include the CEMPr in all tender documents.	TNPA	Prior to call for tenders	TNPA to check tender documents and contract	Incorporated in tender documents
Ensure construction methods are legally compliant	37.	Screen all proposed works (Method Statements for future works) and confirm that no NEMA listed activities or the need for any other authorisations are triggered by the works proposed.	EO	Prior to approval of Method Statement(s)	Method Statement	Approved method statement
	38.	Notify the local authority of the proposed works and confirm the applicability of any bylaws which may affect the works.	TNPA /EO	Prior to the start of activities	Communication with local authority	Confirmation from local authority
Monitor and ensure compliance with the CEMPr	39.	Appoint/designate a suitable EO prior to the start of upgrade and repair activities.	TNPA	Prior to the start of activities	Appointment of EO	Appointment of EO
Ensure appropriate management of environmental records are maintained	40.	Ensure the Environmental Method Statements are approved and filed on site.	Contractor and ECO	Before relevant construction activities commence	Internal Audit	Approved Method Statements signed and filed.
	41.	Maintain a copy of the CEMPr and any other environmental authorisations/permits/licences on site.	Contractor	Duration of maintenance activities	Internal Audit	Approved documents available on site.
	42.	Maintain a complaints register for all complaints/suggestions, The register must list: <ul style="list-style-type: none"> Complainant name and contact details; Date complaint was lodged; Person who recorded the complaint; Nature of the complaint; Actions taken to investigate the complaint and outcome of the investigation; Action taken to remedy the situation; and Date on which feedback was provided to complainant. 	EO	Throughout activities	Inspect complaints register	Availability of register on site Designated person to maintain register Complaints logged Complaints followed up and closed out

Outcome	ID	Mitigation measure / Procedure	Responsible	Implementation Timeframe	Monitoring Methods	Performance Indicators
Ensure all staff are trained and aware of the environmental requirements for the project	43.	<p>Provide environmental awareness training to all personnel on site. Training should include (but not necessarily be limited to) discussion of:</p> <ul style="list-style-type: none"> Potential impact of waste and effluent on the marine environment; Suitable disposal of waste and effluent; Key measures in the CEMPr relevant to workers' activities; and How incidents and suggestions for improvement can be reported. Ensure that all attendees remain for the duration of the training and on completion sign an attendance register that clearly indicates participants' names. 	Contractor and EO	On site establishment and ongoing	Check training attendance register	<p>Register of workers that completed environmental training</p> <p>Compliance of Contractor with the CEMPr</p>
Ensure the site is established with sufficient and appropriate access control	44.	Submit a method statement for site establishment for approval by the EOC at least two weeks prior to the start of activities.	Contractor	Prior to commencement of maintenance activities and ongoing	Method Statement Visual inspections of site	<p>Approved Method Statement</p> <p>Register of illegal entries</p> <p>Site boundaries demarcated and demarcation maintained</p> <p>Signage in place</p> <p>No vegetation cleared or disturbed (excluding grassed areas and weeds).</p>
	45.	Demarcate site boundaries upon establishment and ensure that plant, labour and materials remain within site boundaries.				
	46.	Do not clear any vegetation and do not place any plant/materials on vegetation (excluding grassed areas).				
	47.	Designate any locally sensitive areas beyond the boundary of the site as "No go" areas for all personnel on site. No vehicles, machinery, materials or people shall be permitted in the "No go" area at any time without the express permission of the EO.				
	48.	Place signage in suitable locations to warn members of the public of maintenance activities taking place and to limit access to work areas that may pose a safety risk.				
Maintain good housekeeping practices throughout	49.	Clean up any spills immediately.	Contractor	Throughout activities	Visually inspect areas inside and	Number of contaminations noted on site
	50.	Regularly inspect all equipment and machinery for leaks or damage.				

Outcome	ID	Mitigation measure / Procedure	Responsible	Implementation Timeframe	Monitoring Methods	Performance Indicators
the construction phase	51.	Repair any defects as soon as possible. In the case of leaks, ensure that the leaking water or effluent is captured and not released into the environment.			outside the plant for pollution	
	52.	Keep the site clean, especially during the rainy season when pollutants can wash into the sea with the storm-water.				
Response to environmental pollution	53.	In the event of environmental pollution, e.g. through spillages, immediately stop the activity causing the problem.	Contractor	Throughout activities	Maintain register of pollution events and response Following resumption of activities, frequently inspect repaired equipment to ensure proper functioning	Number of incidents Time activities stopped Number of recurring incidents Availability and completeness of register
	54.	Only resume activity once the problem has been stopped or (in the case of spillages) the pollutant can be captured without reaching the marine environment.				
	55.	Repair faulty equipment as soon as possible.				
	56.	Treat hydrocarbon spills, e.g. during refuelling, with adequate absorbent material, which then needs to be disposed of at a suitable landfill.				
	57.	In the event of equipment, litter and debris entering the sea, remove these immediately.				
	58.	Notify the relevant authorities within one day of an environmental pollution event. As a minimum, inform the following parties: <ul style="list-style-type: none"> • TNPA, • EO; and • DEA. 				
Ensure the site is cleared of all construction materials prior to leaving the site	59.	Remove all equipment, vehicles, equipment, waste and surplus materials (rock armour), site office facilities, temporary fencing and other items from the site.	Contractor	Once activities are complete	Visual inspection of site Keep record of rehabilitation measures	Records of waste disposal State of areas on and surrounding the site Site Closure Audit report
	60.	Clean up and remove any spills and contaminated soil in the appropriate manner.				
	61.	Do not bury discarded materials on site or on any other land not designated for this purpose.				

Outcome	ID	Mitigation measure / Procedure	Responsible	Implementation Timeframe	Monitoring Methods	Performance Indicators
	62.	Rehabilitate all areas affected by the works to at least the same condition as was present prior to activities commencing.				
	63.	Compile and submit the Site Closure Audit report to TNPA				

7 CEMPr Compliance Monitoring

The auditing and monitoring requirements to ensure implementation of the management and mitigation actions in Section 6 are detailed in the sub-sections to follow.

7.1 Monitoring Programme

The key to a successful CEMPr is appropriate performance monitoring and review to ensure effective functioning of the CEMPr and to identify and implement corrective measures in a timely manner. In the event where omissions and/or non-compliances are identified, the problem must be investigated and attended to. All the results obtained during environmental monitoring must be documented for audit purposes.

Table 7-1: Performance monitoring method

Project phase	Monitoring method	Monitoring frequency	Reporting frequency
Planning, design, pre-construction	A pre-construction audit must be undertaken and a checklist prepared by the EO and submitted to TNPA prior to the start of construction. The report must document any non-compliance to be addressed prior to commencement and must include the Final Site Layout Plan.	Once off	Once off
Construction	Monthly audits must be undertaken by the EO during construction. An audit checklist must be completed by the EO after each audit and submitted to TNPA.	Monthly	Monthly
Post-construction	A post-construction audit must be undertaken and a report prepared by the EO and submitted to TNPA immediately after completion of construction. The document should identify any non-compliance to be addressed prior to the contractor vacating the site.	Once off	Once off

7.2 Method Statements

A Method Statement is a document setting out specific details regarding the plant, materials, labour and method the Contractor proposes using to carry out certain activities, usually activities that may have a detrimental effect on the environment. It is submitted by the Contractor to the RP and the EO.

The purpose of a Method Statement is for the Contractor to provide additional details regarding the proposed methodology for certain activities, and for the RP and EO to confirm that these meet the requirements of the CEMPr and acceptable environmental practice. This allows the CEMPr to be less prescriptive and affords the Contractor a certain amount of flexibility or to amend stipulations in the CEMPr, if approved by the EO. It also provides a reference point to detect deviations from the agreed approach to an activity and allows for the proposed approach and methods for undertaking future maintenance and repair activities to be clearly documented and agreed on prior to commencement.

Each Method Statement will address environmental management aspects relevant to the activity and will typically provide detailed descriptions of items including, but not necessarily limited to:

- Nature, timing and location of activities.
- Procedural requirements and steps.
- Management responsibilities.
- Material and equipment requirements.
- Transportation of equipment to and from site.
- Method for moving equipment / material while on site.
- How and where material will be stored.

- Emergency response approaches, particularly related to spill containment and clean-up.
- Response to compliance / non-conformance with the requirements of the CEMPr.
- Any other information deemed necessary by the RP.
- Dredging.
- Placement of dredge spoil.

Detailed method statements may also be requested by the EO for certain aspects of the works proposed. The following list provides examples of Method Statements that may be requested from the Contractor:

- Environmental awareness.
- Material and equipment storage and delivery.
- Fuel storage, dispensing and fuel spills.
- Waste management.
- Management of contaminated water.
- Cement batching.
- Any others considered relevant by the EO or RP.

The Method Statements will be submitted by the Contractor to the RP and EO not less than 14 days prior to the intended date of commencement of an activity. The RP and EO shall accept / reject the Method Statement within 7 calendar days. An activity covered by a Method Statement shall not commence until the RP and EO have accepted such method and once accepted, the Contractor shall abide by the relevant Method Statement.

7.3 Environmental Records and Reports

Environmental records and reports required are listed in Table 7-2.

Table 7-2: Reports required during construction phase

Report	Frequency	From	To
Environmental Checklist	Daily (Weekly)	CER	RP (& EO)
Environmental Compliance Report	Monthly	EO	TNPA & RP
Site Closure Audit	End of Contract	EO	TNPA

7.3.1 Environmental Checklist

The CER will undertake daily site inspections to check on the implementation of the CEMPr by the Contractor and complete a brief report/checklist after the inspection. The completed checklists shall be submitted to the RP at the end of each inspection. This checklist should be discussed between the CER and the RP during the initial site inspection, and agreement reached on the preferred format and content.

The checklists will be submitted to the EO on a weekly basis, however any issues of environmental concern should be reported to the EO immediately.

7.3.2 Environmental Compliance Report

The EO will undertake monthly site inspections to check on the implementation of the CEMPr by the Contractor and complete an Environmental Compliance/Progress Checklist Report after each inspection, detailing any environmental issues, non-compliance and corrective actions to be implemented. Environmental Compliance Reports will be submitted to the RP and TNPA.

7.3.3 Site Closure Audit

The EO will undertake a final site closure audit on completion of the upgrades. The purpose of this is to confirm compliance with all site closure requirements identified by the EO, and that the site has been left in an environmentally suitable condition. If outstanding environmental requirements are observed during this inspection, a further inspection must be carried out to confirm compliance. The Site Closure Audit report must be submitted to TNPA for record purposes.

7.4 Corrective Action

Corrective action is a critical component of the implementation–review–corrective action–implementation (or plan-do-check-act) cycle and it is through corrective action that continuous improvement can be achieved. Where repeated non-compliance is recorded, procedures may need to be altered accordingly to avoid the need for repeated corrective action.

If environmental compliance monitoring by the CER and EO indicates non-conformance with the CEMPr or approved Method Statements, the RP will formally notify the Contractor through a Corrective Action Request. The Corrective Action Request documents:

- The nature of the non-conformance/environmental damage;
- The actions or outcomes required to correct the situation; and
- The date by which each corrective or preventive action must be completed.

Upon receipt of the Corrective Action Request, the Contractor will be required to produce a Corrective Action Plan, which will detail how the required actions will be implemented. The Corrective Action Plan must be submitted to the EO for approval prior to implementation. Once it has been approved, the corrective action must be carried out within the time limits stipulated in the Corrective Action Request.

Additional monitoring by the CER, EO and RP will then be required to confirm the success or failure of the corrective action.

8 Environmental Awareness Training

An Environmental Awareness Programme is considered a necessary part of the CEMPr for the Project. Training of the appropriate construction personnel will help ensure that all environmental regulations and requirements are followed as defined in the relevant Method Statement to be prepared by the Contractor.

Objectives of environmental awareness training are:

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

All individuals on the Project construction site will need to have a minimum awareness of environmental requirements and responsibilities. However, not all need to have the same degree of awareness.

The Contractor shall keep a record of all the environmental related training of the personnel.

Prepared by

SRK Consulting - Certified Electronic Signature



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T. Hale CEAPSA

Senior Environmental Scientist

Reviewed by

SRK Consulting - Certified Electronic Signature



511330/43367/Report

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C. Dalgliesh CEAPSA

Project Reviewer

All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

Appendices

Appendix A: Curricula Vitae of Authors of the CEMPr

Chris Dalgliesh

Principal Consultant



Profession Environmental Practitioner

Education MPhil (EnvSci) with Distinction, Cape Town, 1994
BBusSc (Hons), Cape Town, 1985

**Registrations/
Affiliations** Cert Envir Assessment Practitioner (South Africa) (10/2002)
Member International Association of Impact Assessment
Director SRK South Africa 2018
Director SRK Investments 2011
Director SRK Global 2013 - 2017
SRK Cape Town Managing Partner 2007 - 2015

Specialisation Environmental management consulting

Expertise Chris Dalgliesh has been involved in environmental projects for the past 24 years. His expertise includes:

- EIA and ESIA (EMPR);
- environmental and social due diligence;
- socio-economic impact assessments;
- stakeholder engagement;
- strategic environment assessments and management plans;
- state of environment reporting;
- environmental management frameworks;
- site safety reports for the nuclear industry;
- natural resource management;
- waste management.

Employment

2000 – present SRK Consulting (Pty) Ltd, Director, Partner and Principal Environmental Consultant

1999 – 2000 Arcus Gibb (Pty) Ltd, Associate, Cape Town, South Africa

1996 – 1998 African Environmental Solutions (Pty) Ltd, Senior Environmental Consultant

1994 – 1996 Environmental Evaluation Unit, Environmental Consultant, UCT

1991 – 1993 Novello Music Publishers, Marketing Manager, London, UK

1988 – 1990 JR Phillips, Product Manager, Wokingham, UK

1986 – 1988 Unilever, Trade and Assistant Brand Manager, Durban, South Africa

Publications I have been interviewed and quoted in numerous environmental and sustainability articles published in the press and sector specific journals, including *Engineering News*, *Mining News*, *Business Report* and *Cape Times*, and am a frequent guest lecturer.

Languages English – read, write, speak
Afrikaans – read, write, speak
Dutch – read

Sharon Jones

Principal Consultant



Profession

Environmental Scientist

Education

MPhil (Environmental Management), with distinction,
University of Stellenbosch, 2007
BSc (Hons), (Environmental and Geographical Science),
University of Cape Town, 1997
BSc, University of Cape Town, 1996

**Registrations/
Affiliations**

Pr Sci Nat (South Africa) (400122/05)
Certified Environmental Assessment Practitioner
(CEAPSA) by EAPSA Interim Certification Board
Member, IAIA

Specialisation

Environmental impact assessment, integrated environmental management, environmental due diligence, environmental management plans, public participation, environmental management frameworks.

Expertise

Sharon Jones has been involved in environmental management for the past 20 years working on a broad range of projects in the Western Cape, Mozambique, Namibia, Angola, DRC as well as in Suriname, South America. Her expertise includes:

- a number EIA's undertaken for a variety of activities including mining and port development;
- compilation of Environmental Management Frameworks;
- input into due diligence and gap analysis studies;
- compilation of construction and operational phase EMPs for a range of projects;
- auditing compliance with EMPs on a number of sites.

Employment

2005 – present

SRK Consulting (Pty) Ltd, Environmental Department, Principal Environmental Consultant, Cape Town

2001 – 2005

Ecosense cc, Environmental Scientist, Stellenbosch

1998 – 2001

Planning Partners, Environmental Consultant, Cape Town

Publications

I have been interviewed and quoted in numerous environmental and sustainability articles published in the press and sector specific journals.

Languages

English – read, write, speak
Afrikaans – read, write, speak

Philippa Burmeister (Emanuel)

Principal Scientist



Profession	Environmental Science
Education	Bonsucro Sustainability Auditor Training (2017) International Qualification, Environmental Auditing, Aspects International, 2010 Dip, Project Management, Varsity College, 2008 BSc (Hons), Environmental Science, Rhodes University, Grahamstown, 2002
Registrations/ Affiliations	Pr Sci Nat, South Africa, 400195/08 Member of the South African Affiliate, International Association of Impact Assessors

Specialisation

Philippa is a visionary thought leader in sustainability. Philippa partners with business to identify and execute innovative sustainability solutions to strategic resource challenges. Philippa specialises in large and small scale sustainability assessment. This includes the use of a range of integrated environmental management tools, listed below. The focus of her work is the identification of environmental opportunities and constraints leading to the sustainable use of natural resources to efficiently meet socio-economic needs. This includes auditing and the development of environmental management systems for existing developments.

Expertise

Philippa aims to change the perception of sustainability from a requirement to an asset that business may realise through the implementation of strategic planning and alternatives. Philippa has been involved in integrated environmental management for the past 14 years. Her expertise includes:

- environmental and air quality process management;
- environmental impact assessment;
- strategic environmental assessment;
- strategic (municipal or large scale) and project specific environmental management plans;
- preparation of environmental management frameworks;
- land use planning with a focus on environmental opportunity and constraint mapping;
- development of sustainability frameworks and sustainability appraisal and auditing;
- preparation and auditing of environmental management systems (ISO 14001) and environmental management programmes.

Employment

2016 – 2017	SRK Consulting (Pty) Ltd, Principal Scientist, Environmental Department, Durban
2009 – 2016	SRK Consulting (Pty) Ltd, Senior Scientist, Environmental Department, Durban
2007 – 2009	SRK Consulting (Pty) Ltd, Scientist, Environmental Department, Pietermaritzburg
2003 – 2007	Udidi Environmental Planning & Development Consultants, Environmental Planner

Publications

A number of publications on environmental management. See list on the following page

Languages

English – read, write, speak (Excellent)
Afrikaans – read, write, speak (Fair)

Tamaryn Hale

Environmental Scientist



Profession

Environmental Scientist

Education

Aspects International Environmental Auditors Course, IEMA, 2012

Cert, Bookkeeping, Varsity College, 2010

Cert, Financial Accounting, Varsity College, 2010

BSc (Hons), Environmental Sciences, University of KwaZulu-Natal, 2007

BSc, Biological Sciences, University of KwaZulu-Natal, 2006

**Registrations/
Affiliations**

International Association of Impact Assessment South Africa (IAIASa)

Specialisation

Environmental management; environmental auditing and compliance; stakeholder engagement and water use authorisations.

Expertise

Tammy has been involved in the field of environmental management for the past 9 years. Her expertise include:

- integrated water use licenses and water use licenses for mining, linear and industrial developments;
- environmental impact assessments for mining, linear developments, petrol service stations and fertiliser plants;
- basic assessments for powerlines and substations, linear developments, waste facilities, housing estates, mixed use nodes, retirement villages and cemeteries;
- construction environmental audits for industrial site development;
- development facilitation act applications and planning policy formulation; and
- stakeholder engagement.

Employment

2010 – present

SRK Consulting (Pty) Ltd, Environmental Scientist, Durban

2008 – 2010

Udidi Project Development Consultants, Environmental Planner, Pietermaritzburg

2008 – 2008

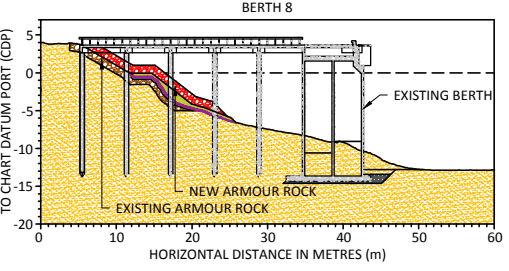
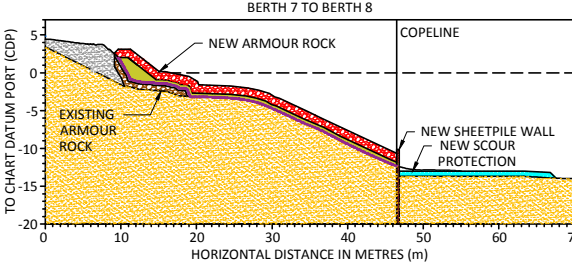
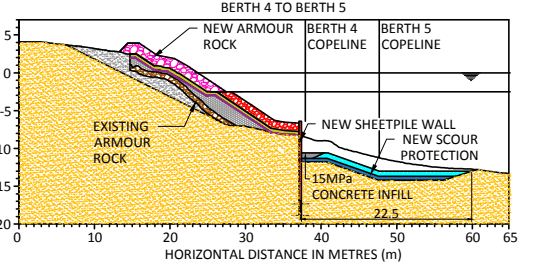
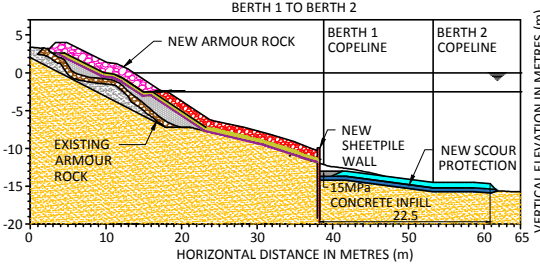
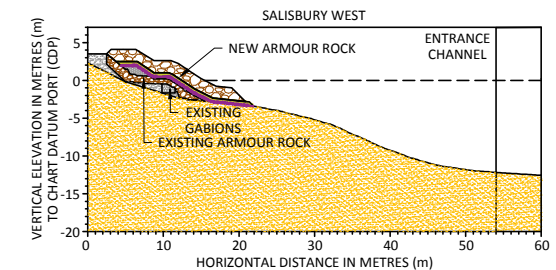
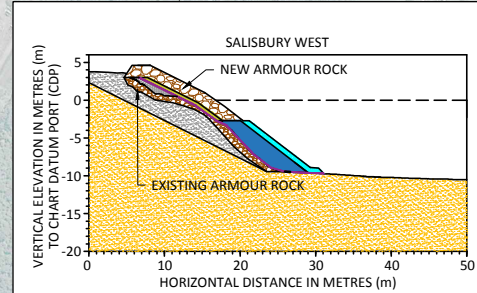
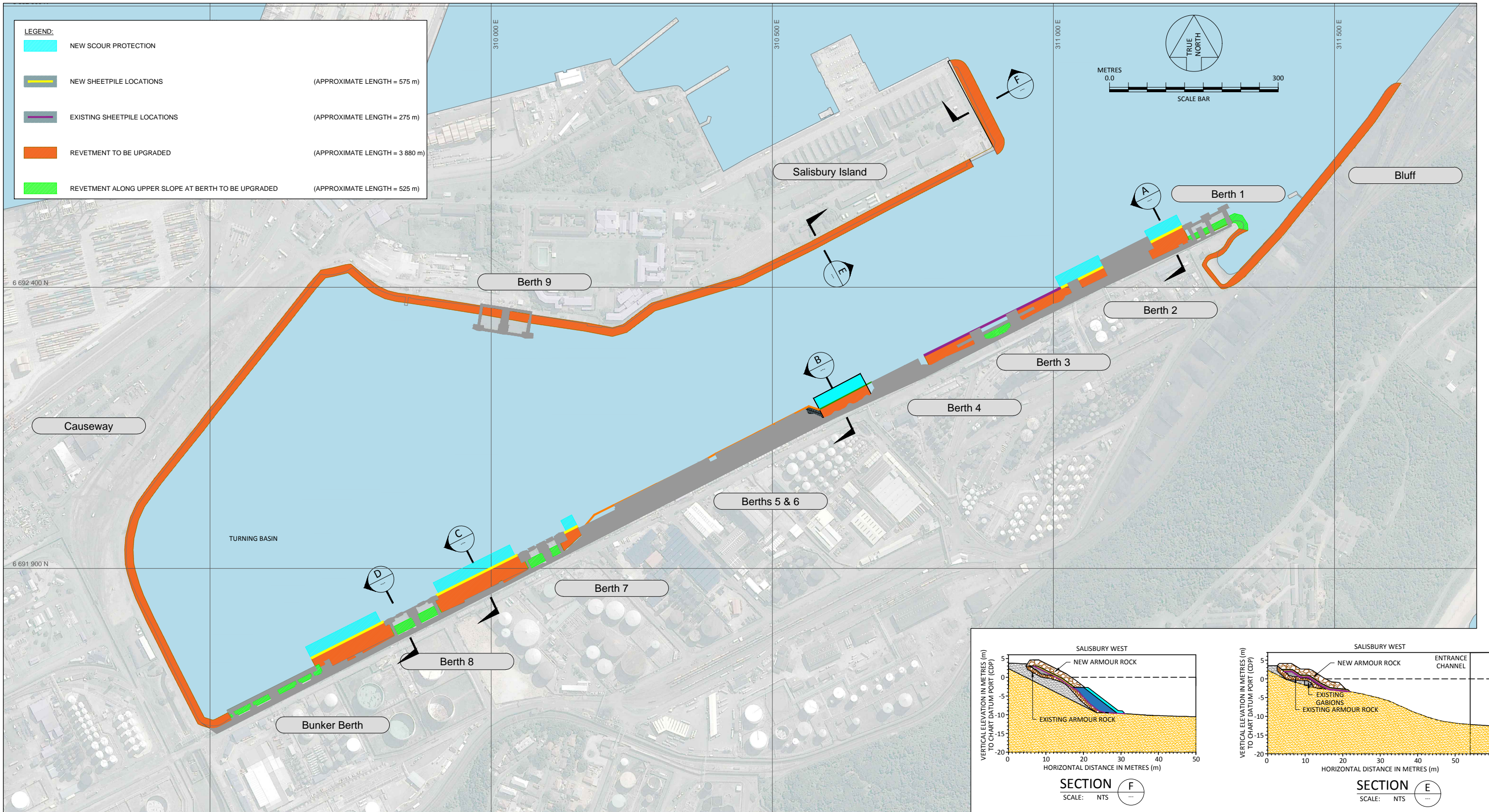
Golder Associates, Public Participation Assistant, Durban

Languages

English – read, write, speak (Excellent)

Afrikaans – read, write, speak (Fair)

Appendix B: Figure Illustrating the Proposed Upgrades to the Seawalls and Revetments



CLIENT	TNPA	PROJECT	ISLAND VIEW SEAWALLS UPGRADE
		DRAWING TITLE	LAYOUT OF AREAS TO BE UPGRADED
		SCALE	NTS
		CODE	S2063 - SK - GA - 120 - S1 - R2
		DATE	

Appendix C: Minutes of meeting with DEA:O&C



Transnet National Ports Authority: Proposed Upgrades of Island View Seawalls – Port of Durban

Minutes of Meeting with DEA: Oceans and Coasts

Held: 2nd Floor, Antarctica and Islands Building, East Pier Road, V&A Waterfront, Cape Town on 27 November 2017 at 10h00

Attendees:	Ulric van Bloemestein	UB	Department of Environmental Affairs (DEA): Oceans and Coasts
	Nokuzola Sukwana	NS	DEA: Oceans and Coasts
	Vishern Beakam	VB	Transnet National Ports Authority (TNPA)
	Gus Hojem	GH	PRDW Consulting Port and Coastal Engineers (PRDW)
	Marli Geldenhuys	MG	PRDW
	Sharon Jones	SJ	SRK Consulting (SRK)
	Jessica du Toit	JD	SRK

1 Welcome and Introductions

- 1.1 Sharon Jones (SJ) welcomed everyone to the meeting regarding the proposed seawall upgrades at the Port of Durban and thanked them for attending. All meeting attendees introduced themselves.

2 Purpose of the Meeting

- 2.1 SJ explained the purpose of the meeting, which was:

- To provide an introduction to the project;
- To provide a description of the proposed dredging and dredge disposal options;
- To confirm the scope and validity of TNPA's existing dumping permit;
- To discuss options for use or disposal of dredge spoil; and
- To confirm whether any additional permits are required in terms of the National Environmental Management: Integrated Coastal Management Act 24 of 2008 (NEM:ICMA) and processes to be followed.

3 Project Motivation and Background

- 3.1 Vishern Beakam (VB) explained the reasons for the proposed seawall upgrades as follows:

- The port entrance has been widened, resulting in higher wave energy in the Island View area and therefore requiring an upgrade of the seawalls along the Island View shoreline;
- Damage to and deterioration of the existing seawall;
- Island View is a National Key point and it is critical that the terminal infrastructure such as pipe racks are suitably protected;
- Geotechnical conditions could pose health and safety risks due to the occurrence of sinkholes behind some berths; and
- Collapse of the revetment could jeopardise the integrity of the adjacent pipe racks.

4 Project Overview and Dredge Disposal Options

- 4.1 Marli Geldenhuys (MG) gave a brief overview of the proposed seawall upgrades and associated activities, including dredging to facilitate upgrades to the seawalls in certain areas. MG noted that although the dredging will only take six months, the entire upgrade project is likely to take 18 months.
- 4.2 MG explained that maintenance dredging (to the advertised depth) will be required (approximately 7000m³), with potential minor additional dredging for scour protection (approximately 2 000m³). Additional dredging for scour protection should still fall within the general maintenance dredging tolerance, i.e. if the basin depth is advertised at -12.8m CD dredging will always be below this level and with the equipment used it may well be up to 2m below this level. The scour protection therefore falls within this tolerance.
- 4.3 The following dredge disposal options were considered:
- Disposal on land (option eliminated due to volumes being very high for landside disposal (i.e. 600 to 900 truck loads would amount to significant cost and traffic impact);
 - Disposal at sea
 - Capital site: Option eliminated because the dredge volumes are too small to justify the licencing of a new dredge disposal site);
 - Maintenance site: Disposal at the current TNPA maintenance dredge disposal site (option eliminated as a standalone option as the dredge volumes are too small to warrant mobilising seagoing hopper barges unless material is first stored temporarily in the basin and then removed by Dredging Services); and
 - Utilisation in the Port: Placement of dredged material in scour holes within the Island View Basin (preferred option).
- 4.4 MG explained that the dredged material could be used to infill scour holes in the harbour basin, which may otherwise undermine the berth structures.
- 4.5 Ulric van Bloemestein (UB) noted that due to the low volume proposed and if the proposed dredging does not go beyond the extent of previous dredging (i.e. maintenance dredging), and if the proposed areas to be dredged fall within the area covered under TNPA's existing maintenance dredging permit, and the material dredged will be placed in scour holes to fulfil a purpose, then neither a dumping at sea permit nor any other application in terms of the NEM: ICMA will be required. Nokuzola Sukwana (NS) was in agreement with this statement. UB advised that TNPA's existing permit must be consulted to determine whether the areas proposed for dredging fall within the permit.
- 4.6 SJ noted that SRK will investigate the applicability of other legislation, including NEMA EIA Regulations and the National Heritage Resources Act 25 of 1999, to the proposed project. She further confirmed that if any public consultation was required, DEA:O&C would be a key commenting authority.
- 4.7 It was agreed that minutes of the meeting as well as an updated Screening Report as produced by SRK consulting would be submitted to DEA:O&C for their information and as a record of informing them of the project. SJ noted that the Screening Report would in all likelihood only be made available after the meeting minutes and presentation have been issued to them.

No further issues were raised and the meeting was closed.

Meeting closed at 11:00 am

Notes taken by: Jessica du Toit

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Signed by:

Sharon Jones

Date: 6 December 2017

Appendix D: Dredging EMP

Transnet National Ports Authority Environmental Management Plan for Dredging Operations in the Port of Durban



Trailer Suction Hopper Dredger (TSHD) Ilembe

1. Introduction	1
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1.2 Objectives of the EMP	2
2. Roles & Responsibilities	3
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2.2 TNPA: Engineering Department	3
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DEFINATIONS AND ABBREVIATIONS:

- DEA: Department of Environmental Affairs
- EMP: Environmental Management Plan
- TNPA: Transnet National Ports Authority
- SHE: Safety, Health and Environment
- Permit : Refers to the permit for dumping of dredged material at sea issued by the Department of Water and Environmental Affairs in terms of the Dumping at Sea Control Act, of 1980 (Act 73 of 1980) and the Integrated Coastal Management Act (Act 24 of 2008)

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1. Introduction

Dredging is the excavation, lifting and transport of underwater sediments and soils for the construction and maintenance of ports and waterways. Dredging activities are essential for the following reasons:

- (a) the safe navigation in ports, harbours, marinas and inland waterways,
- (b) development of port facilities; for flood mitigation;
- (c) the removal of sediments from structures, basins and water intakes.

South African Ports, including the Port of Durban conduct three types of dredging i.e. capital, maintenance, and reclamation dredging. Capital dredging is necessary to create ports, harbours, and navigable waterways, whilst maintenance dredging is required to maintain adequate water depths for safe navigation by periodic removal of sediment accumulated within shipping channels through natural and human induced sedimentation. Reclamation dredging is done at the sand trap adjacent to the South Breakwater for the purpose of beach replenishment.

The catchment for the Port of Durban is 250 square kilometres in size encompassing an extensive municipal stormwater reticulation network three rivers, namely the uMbilu, uMhlatuzana and aManzimnyama. These rivers transport sediment from the catchment into the port, which can accumulate within the shipping channels posing a problem for safe vessel navigation. Maintenance dredging is therefore necessary to maintain the depth of these channels.

Transnet National Ports Authority Port of Durban in accordance with its Safety, Health and Environment Integrated Management System Policy, is committed to ensuring that all TNPA activities are carried out in accordance with applicable environmental legislation and to minimize the negative impact of port activities on the environment. This document serves as the Environmental Management Plan for the dredging.

1.1 Purpose of the EMP

Dredging and disposal of dredged material may have a number of potential negative environmental implications for the marine environment, ranging from:

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- The negative impact on the water quality through mobilisation of metals and other contaminants found in the aquatic sediment which can include polyaromatic hydrocarbons, polychlorinated biphenyls, dioxins, mercury, chromium, cadmium, lead, copper and zinc.
- The increasing in turbidity and total suspended solid concentrations in the water.
- The decrease in dissolved oxygen levels in the water column particularly in areas with a high organic load.
- The disturbance and or removal of micro and macro benthic fauna.
- Unplanned discharge of dredged material outside of the designated disposal sites which can impact on the receiving environment.
- Noise and air pollution

The scale of these impacts depends on several factors including the dredging activity (magnitude, frequency, methodology) and the sensitivity of the existing environment. Taking into consideration the significance of the likely impacts, TNPA will need to implement necessary mitigations measures to minimize the impact of maintenance dredging activities on the environment. This document serves to highlight those issues pertinent to the dredging.

The purpose of this Environmental Management Plan for dredging is therefore as follows:

- To describe how potential negative environmental impacts must be managed through appropriate mitigation measures.
- To prescribe monitoring actions that must ensure that the EMP is adhered to.

1.2 Objectives of the EMP

The objective of the EMP is to provide a framework for the environmental management of the dredging and dredge disposal activities to reduce or mitigate potential environmental impacts that could arise as a result of the activity. It should be considered a "live" document that must be updated regularly.

The specific environmental objectives of the EMP are to ensure that all necessary steps are taken to ensure the following:

- That appropriate pollution control and other environmental protection measures are taken by Dredging Services, in accordance with applicable permit and laws or regulations.

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- Implement measures to mitigate the impacts on the dredging on the marine environment.

2. Roles & Responsibilities

2.1 TNPA: Environmental Management and Engineering Departments

The Environmental Management Department has the responsibility to ensure that all activities undertaken within the ports monitored and controlled to prevent significant impacts on the environment. TNPA Environmental Management Department Port of Durban together with the Dredger Services SHEQ Department is responsible for carrying out audits on compliance with the requirement of this EMP and the permit. Audits are conducted in line with the EMP, with Non-conformance Reports (NCRs) issued for non-compliances.

2.2 TNPA Port of Durban: Engineering Department

- Collate hydrographic survey data.
- To apply for a dredging permit.
- Record public complaints related to operations on the site and ensuring that these are addressed.
- Maintenance of records and documentation
- Notification to DEA prior to commencement of dredging operation.

2.3 TNPA: Dredging Services

Continuous/ daily on site environmental management will be the responsibility of the Dredging Services personnel and will include:

- Ensuring compliance with the EMP and permit during dredging .
- Reporting environmental incidents to the appropriate authorities (DEA- Oceans and Coasts).
- Informing TNPA Environmental Management Department of environmental incidents.
- Implementation of requirements contained in the permit.
- Monitoring and measuring of resource consumption.

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- Maintenance of records and documentation (for inspection by relevant authorities).
- Prepare the dredging report (Content as per Annexure 3)

2.4 Dredgers used in the Port of Durban.

- Isandlwana (Trail Suction Hopper Dredger)
- ILembe (Trail Suction Hopper Dredger)
- Italeni (Grab Hopper Dredger)
- Impisi (Plough Tug)

3. Dredging Activities Management

3.1 Dredging Planning phase

Prior to any dredging activities taking place, a hydrographical survey must be undertaken to determine the areas which are not to designed depth and dredging is required.

- In order to minimize the negative environmental impacts, dredging must be avoided in areas which are over depth or at designed depth.
- Selection of equipment that will minimize impact on the environment and enhance efficiency;
 - Consider the use of the most appropriate dredger to reduce re-suspension and loss of dredged material.
 - Consider the use of technology to keep material consolidated (lower water content) to reduce re-suspension of contaminants and limit the spread of material.
 - Consider the use of the plough tug to level high spots to extend the frequency in which the removal of sediment is required.
- Timing of operations, undertake dredging during favourable conditions in order to reduce the extent of dispersal of re-suspended sediment.

3.2 Excavation, lifting and loading

This is a phase where materials are excavated and loaded into hoppers or onto barges.

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- (a) Inspect and maintain the dredger regularly to ensure that this is in a good condition for minimising leakage and reducing air and/or noise pollution.
- (b) Undertake excavation within a suitable rate (for both mechanical and hydraulic) to minimise dispersion of sediments and dilution.
- (c) Do not overfill the barges or hopper, when loading by mechanical dredgers.
- (d) Monitor the loading activities on the grab dredgers to ensure that there are no overflows of the hopper.

3.3 Transportation

This is a phase where dredged materials are transported to an approved disposal site at sea.

- (a) Prior to leaving the dredging site, ensure that a barge or hopper is not overloaded to a level that will cause the overflow of materials.
- (b) Hopper door to be sealed to prevent the loss of material.
- (c) Avoid loss of materials during transportation to the disposal site by considering weather and sea conditions.
- (d) Ensure that the dredge track plot system is fully operational as this system serves as a record should there be any pollution related allegations associated with dredging activities.

3.4 Disposal

- (a) Only dispose of dredged spoil in approved site as indicated in the dredge spoil dumping Permit.
- (b) Offshore disposal of dredge material shall be carried out under the conditions set out in the dumping permit. Dumping is prohibited within the No Dump Area stipulated in the permit and the within 150 meters of the boundary of the dumpsite.
- (c) The dumpsite must be monitored as required in the permit issued.

3.5 Sand Trap Reclamation and Beach Replenishment

Reclamation from the sand trap and beach replenishment must be undertaken in accordance with the Durban Beaches Sand Nourishment Scheme Environmental Maintenance Management Plan.

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3.6 Emergency situations

Possible emergency situations that may arise from the dredging activities include:

- Dumping of dredged materials outside the designated dumping area, due to unfavourable weather conditions, mechanical failure or immediate risk to life or property.
- Oil Spill
- Wrecking of the vessel.
- In the event of a environmental incident, the personnel on duty should inform the following persons immediately:
 - Dredging Services SHEQ Manager: 031 361 8829 / 083 793 9470
 - Dredging Marine Compliance Manager: 031 361 3870 / 071 879 5035
 - TNPA Environmental Manager: 031 361 8045 / 083 700 4085
 - TNPA Engineering Department: 031 361 8720
- The SHEQ Manager shall be responsible for notifying the Department of Environmental Affairs – 031 819 2450
- Dredging Services must ensure that the incident is reported to the Department of Environmental Affairs (Complete the form in Annexure 2).
- In the event of an emergency situation whereby a situation has arisen suddenly that poses an imminent and serious threat to the environment, human life or property and a dredged material must be dumped outside of the designated dumpsite and if time permits, the dredging services SHEQ Manager shall contact the DEA for Section 30A approval prior to dumping.
- The Transnet Incident Reporting Form (Annexure 4) must be completed by the master of the vessel must be completed and submitted to the Dredging Services SHEQ Manager.

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4. Applicable Legislation

- Constitution of South Africa
- National Environmental Management Act No. 107 of 1998
- National Water Act No. 36 of 1998
- National Environmental Management: Biodiversity Act No. 10 of 2004
- National Environmental Management: Waste Act No. 59 of 2008
- National Environmental Management: Integrated Coastal Management Act No. 24 of 2008
- Merchant Shipping Act
- IMO Regulations
- National Ports Act No. 12 of 2005

5. Complaints Register

A complaints Register must be maintained. The register should include columns for recording the details of the complainant, details of the complaint, the corrective action taken and by whom and when the complaint was closed out.

6. Incident Register

An Incident Register must be maintained. The register should include columns for listing the type of incident, the response taken, the person responsible, any follow-up action required.

7. Environmental audits

Environmental audits are to be conducted by the TNPA Port of Durban Environmental Department together with the Dredging Services SHEQ Manager. These audits must include checking of compliance with the conditions of the permit, EMP Requirements,

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incident register (and how these have been closed out) as well as of any environmental non-conformance reports (NCRs). 1. Copies of the audits or inspection carried out, the deviations noted and how these were closed out must also be kept on file.

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Annexure 1: Permit for loading and disposal of maintenance dredged material.



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

REF: DU – SA/03 MAINTENANCE
Enquiries: Dr.Y. Peterson
Tel: 021 619 2450 E-mail: ypeterson@environment.gov.za

Permission is hereby granted in terms Chapter 8, Section 71 (1) (a), of the Integrated Coastal Management Act, 2008 (Act No. 24 of 2008) and the Dumping at Sea Regulations, to the **Transnet National Ports Authority of South Africa** for the disposal at sea of up to **675 000 m³** of dredged material from maintenance dredging at the Port of Durban.

This permit is subject to the terms and conditions set forth in Sections B and C further below.

SECTION A: PERMIT GRANTED

Permit number	General Permit Number 07/2018
Applicant	Transnet National Ports Authority
Address	P.O. Box 1027, Durban 4000
Activity	Loading and disposal of maintenance dredge material
Dumping material	Dredged Material
Volume	675 000 m³
Depth range	Site I = 64 m
Contractor / Transporter :	Dredging Services (TNPA) <ul style="list-style-type: none">• Italeni (Grab Dredger);• Ilembe (Trailer Suction Dredger);• Isandlwana (Trailer Suction Dredger) and;• Any other dredger contracted to do maintenance in the Port (TBC).
Period of validity	<u>01 April 2018 to 31 March 2019.</u>

SECTION B: SPECIFIC CONDITIONS

The Permit Holder is required to adhere to the following specific conditions under which this permit is granted:

1. Dumpsite

- 1.1 Dumping shall take place within the following coordinates and at a distance of no less than 150 meters from the boundaries of the dumpsite.



- 1.2 Dumping within **No Dump Area** is strictly prohibited without prior approval from the Department of Environmental Affairs. The no dump area is demarcated by the following co-ordinates:

FID	X Longitude	Y Latitude
0	31.1098	-29.8671
1	31.0932	-29.8860
2	31.1198	-29.8721
3	31.1031	-29.8910

2. Materials, dredging and disposal methodology

- 2.1 The applicant shall implement measures within and beyond the validity period of this permit to reduce the concentration of Cadmium and Copper detected in sediment from the Silt Canal.
- 2.2 No other material other than what is authorised by this permit may be dumped.
- 2.3 Vessels authorised to transport the dredged material shall avoid spillages at places other than the permitted disposal site. In the event of a spillage occurring outside the designated dumping area, an incident report must be compiled and submitted to the Department immediately.
- 2.4 This permit must, in its complete form, be made available on board the dredger(s) for inspection purposes.
- 2.5 The Permit Holder shall notify the Department in writing at least 48 hours before the commencement of the dredging and disposal operations.
- 2.6 Dumping of any materials not specifically identified, or in excess of the volume authorised under this permit shall constitute an offence in terms of Section 79 (1), (2) and (3) of the Integrated Coastal Management Act, 2008 (Act No. 24 of 2008).
- 2.7 The exact volume of the material dumped shall be reported to the Department within three months of completion of the operation or expiry of the permit, whichever comes first.

SECTION C: GENERAL CONDITIONS

The applicant is required to adhere to the following general conditions:

1. This permit does not exempt the applicant from complying with any other applicable legislation.
2. The Permit Holder must admit access to any enforcement officer or other official designated pursuant to the ICM Act, to any vessel or structure involved in the loading or disposal at sea referred to under this permit, at any reasonable time during the period of this permit.

3. This permit may not be transferred or assigned to any other person or organisation, except with written permission from the Department.
4. The Department reserves the right to amend or revoke this permit on the basis of non-compliance or should it be determined that dumping has resulted, is resulting, or may result, in significant harm to the marine environment or human health.
5. **Emergency Situations:** In terms of Section 72 (1) of the Integrated Coastal Management Act, 2014 (Act No. 36 of 2014), in the event of an emergency that poses an unacceptable risk to the environment or to human health or safety and where there is no other feasible solution other than dumping of dredged material outside the offshore disposal site specified in this permit, permission from the Department of Environmental Affairs: Branch Oceans and Coasts must be granted for such emergency dumping. In such incidences, the Permit Holder must contact **The Director: Coastal Pollution Management (083 530 3127)**. If such emergency dumping occurs with or without the requisite permission of the Department, the Permit Holder shall report the incident immediately to the Department providing full details of the cause of the emergency, the measures taken to mitigate the incident, other alternatives considered other than dumping the material, the amount of material dumped, the location of the material and any other information required by the Department. The Permit Holder shall in addition comply with the requirements of Section 30 of the National Environmental Management Act, 1998 (Act 107 of 1998).
6. This permit is granted on the assumption and condition that all information submitted by the applicant in connection with the granting of this permit is, complete, true and correct in all material respects.
7. All reports and correspondence to the Department under this permit shall be submitted to: **The Director: Coastal Pollution Management, Department of Environmental Affairs, Private Bag X 4390, Cape Town, 8001, Tel (021) 819 2450.**
8. Any reference to the Permit Holder in these permit conditions includes the entity or person, his/her or its employees (whether permanent, full-time or part-time), his/her or its contractors, agents or advisers.

Permit No. 07/2018 Port of Durban


9. Vessels used for the purposes of this permit must conform to all South African Maritime Safety Authority (SAMSA) regulations.
10. This permit may only be utilised by the individual/entity whose name appears on the permit. If the Permit Holder or its employees are personally utilising the permit, he/she must be in possession of a certified copy of this permit and proof of identity.
11. If the permit is being utilised by an individual/skipper/company/organisation, authorised by the Permit Holder, he/she must be in possession of a certified copy of this permit, proof of identity and a letter of authorisation signed by the permit holder.
12. This permit is valid for the period 01 April 2018 to 31 March 2019.



.....
ACTING CHIEF DIRECTOR: INTEGRATED COASTAL MANAGEMENT

DATE: 08/03/2018

Annexure 3: Section 30 Emergency Incident Reporting Form

 <p>environmental affairs Department: Environmental Affairs REPUBLIC OF SOUTH AFRICA</p>	Document Type:	Section 30 (5) Emergency Incident Report	
	Title:	EMERGENCY INCIDENT REPORT FOR:	
	Document Status:		
Reference:		Initial Submission Date:	
Revision No.:		Compiled by:	

This form provides a template for the emergency incident report required in terms of section 30(5) of the National Environmental Management Act (Act No. 107 of 1989) (hereinafter “NEMA”) in which 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: (a) the nature of the incident; (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; (c) initial measures taken to minimise impacts; (d) causes of the incident, whether direct or indirect, including equipment, technology, system, or management failure; and (e) measures taken and to be taken to avoid a recurrence of such incident.

In terms of section 30(1)(a) of NEMA, an “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.

In line with section 24 of the Constitution of the Republic of South Africa (Act No. 108 of 1996), “serious” is taken to be a measure of the impact of an incident where such an incident has had, could have had, is having, or will have a negative impact on human health or well-being.

• RESPONSIBLE PERSON			
In terms of section 30(1)(b) of NEMA, the “responsible person” includes any person who: (i) is responsible for the incident; (ii) owns any hazardous substance involved in the incident; or (iii) was in control of any hazardous substance involved in the incident at the time of the incident			
<input type="checkbox"/> Name:		<input type="checkbox"/> Designation:	
<input type="checkbox"/> Postal Address:		<input type="checkbox"/> Physical Address:	
<input type="checkbox"/> Telephone (B/H)		<input type="checkbox"/> Telephone (A/H)	
<input type="checkbox"/> Nature of Business:			

• EMERGENCY INCIDENT SUMMARY INFORMATION							
Mark the appropriate boxes							
<input type="radio"/> Fire:		<input type="radio"/> Spill:	<input checked="" type="checkbox"/>	<input type="radio"/> Explosion:		<input type="radio"/> Gaseous Emission:	
<input type="radio"/> Injuries		<input type="radio"/> Reportable injuries:		<input type="radio"/> Hospitalisation:		<input type="radio"/> Fatalities:	
<input type="radio"/> Open water impacts:		<input type="radio"/> Ground water impacts:		<input type="radio"/> Atmospheric impacts:		<input type="radio"/> Soil impacts:	<input checked="" type="checkbox"/>
<input type="radio"/> Own emergency response involved	<input checked="" type="checkbox"/>	<input type="radio"/> Fire prevention services involved		<input type="radio"/> Government hazardous materials emergency response involved		<input type="radio"/> More than 1 governmental emergency response service involved	
<input type="radio"/> Emission of non-toxic substances at low concentrations	<input checked="" type="checkbox"/>	<input type="radio"/> Emission of non-toxic substances at high concentrations		<input type="radio"/> Emission of toxic substances at low concentrations		<input type="radio"/> Emission of toxic substances at high concentrations	
<input type="radio"/> No evacuation required		<input type="radio"/> Immediate area evacuated	<input checked="" type="checkbox"/>	<input type="radio"/> Immediate surrounds evacuated		<input type="radio"/> Evacuation of the general public	<input checked="" type="checkbox"/>

• INITIAL EMERGENCY INCIDENT REPORT				
<p>In terms of section 30(3) of NEMA, 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: (a) the nature of the incident; (b) any risks posed by the incident to public health, safety and property; (c) the toxicity of substances or byproducts released by the incident; and (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: (i) the Director General; (ii) the South African Police Services and the relevant fire prevention service; (iii) the relevant provincial head of department or municipality; and (iv) all persons whose health may be affected by the incident.</p>				
<input type="radio"/> Description	<input type="radio"/> Date:	<input type="radio"/> Time:	<input type="radio"/> Medium:	<input type="radio"/> Contact Details:
Affected persons:			Affected area cordoned off for contamination	

● INCIDENT DETAILS

In terms of NEMA section 30(5)(a) and (d), the responsible person must report on the nature of the incident as well as the causes of the incident, whether direct or indirect, including equipment, technology, system, or management failure

○ Incident start time:	+/-	○ Incident duration:	3 Hrs
○ Duration of danger:	24 Hrs	○ Duration of exposure:	+/-
○ Incident description	Plans, diagrams, maps or any other graphical material relating to the incident description must be attached as annexure B3.		
○ Wind speed and direction		○ Ambient air temperature	
○ Weather conditions		○ Other relevant meteorological conditions	

● POLLUTANTS RELEASED DURING INCIDENT

In terms of NEMA section 30(5) (b), the responsible person must report on the substances involved and an estimation of the quantity.

List all the pollutants directly released during the incident (i.e. exclude those pollutants that resulted from mitigation measures, e.g. flaring, treatment, dilution etc.)

○ Substance or mixture of substances	○ Reference Number	○ Phase	○ Total Quantity emitted	○ Unit	○ Nature of emission
			+-	Kiloliters	P

● SECONDARY POLLUTANTS RESULTING FROM INCIDENT

In terms of NEMA section 30(5)(b), the responsible person must report on the substances involved and an estimation of the quantity released.

List all the pollutants that resulted from mitigation measures, e.g. flaring, treatment, dilution etc.

○ Substance or mixture of substances	○ Reference Number	○ Phase	○ Total Quantity emitted	○ Unit	○ Nature of emission
			+-	Kiloliters	

1. POLLUTANT CONCENTRATIONS

In terms of NEMA section 30(5) (b), the responsible person must report on the substances involved and an estimation of the quantity released.

List all the pollutants detailed in sections 5.1 and 6.1

1.1 Substance or mixture of substances	1.2 Reference Number	1.3 Estimated pollutant concentration				1.7 Concentration unit (e.g. ppm)
		1.4 0m	1.5 100m	1.6 500m		
				0		

• INCIDENT IMPACT

In terms of NEMA section 30(5)(b), the responsible person must report on possible acute effect on persons and the environment and data needed to assess these effects;

o Minor injuries	
o Reportable injuries	
o Hospitalisation	
o Fatalities	
o Biological impacts	
o Impact area	
o Data	Attach relevant impact reports, medical reports, death certificates, post mortem reports, environmental monitoring data, etc.

• EXISTING PREVENTION PROCEDURES AND/OR SYSTEMS

o Foresight	
o Procedures and/or systems	
o Procedure and/or systems failures	
o Technical failure	

2. INITIAL INCIDENT MANAGEMENT	
In terms of NEMA section 30(5)(c), the responsible person must report on initial measures taken to minimise impacts.	
2.1 Evacuation	
2.2 Technical measures	
2.3 Mitigation measures	
2.4 Emergency Services	

3. CLEANUP AND/OR DECONTAMINATION			
In terms of NEMA section 30(5)(c), the responsible person must report on initial measures taken to minimise impacts.			
3.1 Cleanup and/or decontamination			
○ Permissions and Instructions			
11.3 Type	11.4 Statute	11.5 Issued By	11.6 Details

• MITIGATION MEASURES			
In terms of NEMA section 30(5)(e), the responsible person must report on measures taken and to be taken to avoid a recurrence of such incident.			
○ Measure	○ Objective	○ Cost	○ Timing

4. AUTHORISATIONS			
Provide detail on all authorisations (including permits, licenses, certificates, etc.) in respect of the activity to which the incident relates.			
4.1 Type	4.2 Statute	4.3 Issued By	4.4 Issue & Expiry Date

• HISTORY			
Provide details on any and every similar incident involving the responsible person in the last 24 months. Similar incidents include those that: (i) involved similar circumstances; (ii) involved similar emissions; (iii) involved similar personal; and/or (iv) involved similar impacts.			
○ Incident title	○ Report reference	○ Date of incident	○ Summary of event

• HISTORY			
Provide details on any and every similar incident involving the responsible person in the last 24 months. Similar incidents include those that: (i) involved similar circumstances; (ii) involved similar emissions; (iii) involved similar personal; and/or (iv) involved similar impacts.			
○ Incident title	○ Report reference	○ Date of incident	○ Summary of event

Signed by, or as a mandated signatory for, the responsible person:		Date:	
--	--	-------	--

Annexure 3: Content of the dredging Report

The content of the dredging report should include the followings:

- Description of the dredger used during dredging, volumes of dredge spoil disposed of at sea.
- Hydrographic survey of the dumpsite (Done Annually).
- Copy of the track plot

ANNEXURE 4: OCCURRENCE (INCIDENT) REPORT FORM

TO BE COMPLETED WITHIN THE SHIFT IN WHICH THE OCCURRENCE OCCURRED – IF NOT PRACTICABLE, AS SOON AS POSSIBLE THEREAFTER

PART A: RECORDING OF OCCURRENCE:

1 Port or Service

2 Department:

3 Section:

4 Event Location

5 Incident Date:

6 Time:

7 Detailed description of occurrence:

8 Occurrence Classification

<input type="checkbox"/>	Operations
<input type="checkbox"/>	Safety
<input type="checkbox"/>	Health
<input type="checkbox"/>	Environment
<input type="checkbox"/>	Quality
<input type="checkbox"/>	Finance

<input type="checkbox"/>	Assets
<input type="checkbox"/>	Claims
<input type="checkbox"/>	Human Resource
<input type="checkbox"/>	Legal
<input type="checkbox"/>	Security
<input type="checkbox"/>	Other:

9 Entry Type:

<input type="checkbox"/>	Port Authority Occurrence (PAO)
<input type="checkbox"/>	Port Authority Near Misses (PAN)
<input type="checkbox"/>	Port Authority External (PAE)
<input type="checkbox"/>	Port Terminal Occurrence (PTO)

10 Occurrence Level

<input type="checkbox"/>	Level 1 (BOI to be conducted)
<input type="checkbox"/>	Level 2
<input type="checkbox"/>	Level 3
<input type="checkbox"/>	Level 4

11 Detailed visual/diagrammatic representation of occurrence scene

NOTE: Include demarcation lines, signage, position of equipment, position of persons (Incl. Witnesses), obstructions, road markings, demarcation lines, etc.

PART B (1): PERSONS INVOLVED:

PERSON (S) INVOLVED IN OCCURRENCE

PARTY A

PARTY B

- 1 Surname & First Name
- 2 Occupation:
- 3 Residential address

- 4 Postal Address
- 5 Telephone number
- 6 Facsimile number
- 7 Gender (Male/Female)
- 8 Identity Number:
- 9 Employee Number:
- 10 Experience in work: (yy/mm)
- 11 Activity in connection with work

Note: Yes/No

Note: Yes/No

SUPERVISOR

- 1 Surname & First Name
- 2 Occupation:
- 3 Employee Number:
- 4 Section:
- 5 Supervisor's Manager:
- 6 Telephone number:

EMPLOYER (IN CASE OF THIRD PARTY INVOLVEMENT)

- 1 Name of Company
- 2 Physical Address:

- 3 Postal address:

- 4 Telephone number:
- 5 Facsimile:

PART B (2): WITNESSES:

WITNESS 01

WITNESS 02

- 1 Surname & First Name (s)
- 2 Occupation:
- 3 Employed by:
- 4 Residential address:

- 5 Telephone Number:
- 6 Identity Number

PART C: OCCURRENCE CONSEQUENCE

ENVIRONMENT	
Consequence Type	Pollution
Discharge	Air
Spillage	Water
Leakage	Ground (Soil)
Emission	
Unauthorised Development	
Late approval of permits	
Breach of permit conditions	
Legislative Breach	
Other:	

HEALTH	
Consequence Type	Exposure
Physical	Heat
Psychological	Dust
Chemical	Fumes/Smoke
Biological	Noise
Ergonomics	Fire
Other:	Gas
	Radiation
	Vibration
	Oxygen Deficiency

SAFETY	
Consequence Type	Exposure
Collision	Heat
Vehicle Incident	Chemical
Fire	Fire
Explosion	Ergonomics
Uncontrolled Release	Lighting
Marine Incidents	
Machine/Equipment out of control	
Injury on Duty	
Derailment	

Injuries	Fatality
0	0
One - Two	One - Two
Three - Five	Three - Five
Six and more	Six and more

ASSETS AND PROPERTY DAMAGE	
Assets and Property type	
Motor (e.g. vehicle, tractor)	Infrastructure
Machinery	Marine Fleet
Equipment	
Building	
Other:	

LEGAL	
Consequence Type	
Litigation	Liability
Penalties	Conviction
Notice	Stop Certificate

FINANCE		OPERATIONS	
Consequence Type		Consequence Type	
Financial Loss		Unplanned shutdown	
Bad Investment		Business interruption	
Wasteful Expenditure			
Penalties Incurred			
Other:			

SECURITY	
Consequence Type	
Arrest	Shooting
Assault	Hijack
Cable theft	Hostage
Fraud	Illegal Access
General Theft	stowaways
Break-in	Poaching
Industrial Action	Drug Trafficking
Murder	Human Trafficking
Robbery	Bribery
Sabotage	Suicide
Rape	Corruption
Other:	

PART D: REPORTABLE: (Please mark with X in the appropriate box)

1	Dept. of water and environment	<input type="checkbox"/>	Date Reported	<input type="text"/>
2	Dept. of Transport	<input type="checkbox"/>	Date Reported	<input type="text"/>
3	Dept. of Labour	<input type="checkbox"/>	Date Reported	<input type="text"/>
4	Compensation Commissioner	<input type="checkbox"/>	Date Reported	<input type="text"/>
5	National Nuclear Regulator	<input type="checkbox"/>	Date Reported	<input type="text"/>
6	Rail Regulator	<input type="checkbox"/>	Date Reported	<input type="text"/>
7	National Key Point	<input type="checkbox"/>	Date Reported	<input type="text"/>
8	Local Authority	<input type="checkbox"/>	Date Reported	<input type="text"/>
9	S.A.M.S.A.	<input type="checkbox"/>	Date Reported	<input type="text"/>
10	Insurance	<input type="checkbox"/>	Date Reported	<input type="text"/>
11	Customs	<input type="checkbox"/>	Date Reported	<input type="text"/>
12	Dept. Home Affairs	<input type="checkbox"/>	Date Reported	<input type="text"/>
13	Dept. of Health	<input type="checkbox"/>	Date Reported	<input type="text"/>
14	Dept. of Agriculture	<input type="checkbox"/>	Date Reported	<input type="text"/>
15	National Intelligence	<input type="checkbox"/>	Date Reported	<input type="text"/>
16	Port Regulator	<input type="checkbox"/>	Date Reported	<input type="text"/>
17	Civil Aviation	<input type="checkbox"/>	Date Reported	<input type="text"/>
14	S.A.P.S.	<input type="checkbox"/>	Date Reported	<input type="text"/>
			S.A.P.S Case Number:	<input type="text"/>

8 Additional Comments (If any):

PART E: INVESTIGATION REPORT:

- 1 Name of investigator 2 Date of investigation
3 Occupation: 4 Telephone Number:
5 Cause(s) of the Occurrence

NOTE: Include Sub-standard conditions & practices / Job factors / Personal

- 6 Steps taken or required to be taken to prevent a recurrence of a similar incident in the future

ACTION PLAN	RESPONSIBLE PERSON	TARGET DATE	COMPL. DATE

SIGNATURE
INVESTIGATING OFFICER

DATE

SIGNATURE
SAFETY, HEALTH AND ENVIRONMENTAL REPRESENTATIVE
(where applicable)

DATE

PART F: COMMENTS / REMARKS BY BUSINESS UNIT MANAGER:

- 1 I am in agreement with the findings of the investigation officer and concur with the steps recommended by him/her to prevent recurrence of a similar incident in the future.

<input type="checkbox"/>	YES
--------------------------	-----

<input type="checkbox"/>	NO
--------------------------	----

- 2 Additional steps to be taken to prevent a recurrence of a similar occurrence in the future

ACTION PLAN	RESPONSIBLE PERSON	TARGET DATE	COMPL. DATE

- 3 Comments regarding liability aspect where a third party has incurred losses as a result of this occurrence.

SIGNATURE
SECTION / DEPARTMENTAL HEAD

DATE

Appendix E: Guidelines for Development of an Oil Spill Contingency Plan

Guidelines for development of an Oil Spill Contingency Plan

A plan for action needs to be prepared in anticipation of a spill of a marine contaminant, such as oil. Contingency plans are essential because they establish practical plans of action for all types of spills so that, when spills do occur, a quick response can minimize the damage. Site or project specific oil spill contingency plans must be aligned with any local oil spill contingency plans and must be submitted to Coastal Pollution Management for approval.

The first step in developing a plan is to learn as much about the area as possible.

- Contingency plans normally include the following:
 - Identification of authority and a chain of command in the case of a spill;
 - A list of persons and organizations that must be immediately informed of a spill;
 - An inventory of available trained spill personnel and spill response equipment;
 - A list of actions that must be taken (in order of priority);
 - A communication network to coordinate response;
 - Probable oil movement patterns under different weather conditions; and
 - Sensitivity maps and other technical data.
- In developing the contingency plan, the following must be taken into consideration:
 - Important or sensitive physical and biological resources within or near the area, such as marshes, unusual flora (plant life) and wildlife resources such as fish, shellfish, marine mammals and birds;
 - Important habitat areas required by particular species for spawning, feeding or migration;
 - Tides, currents and local climatic conditions, such as wind and severe weather patterns;
 - Shoreline characteristics; and
 - Proximity to roads, trained response personnel, oil spill clean-up equipment, etc

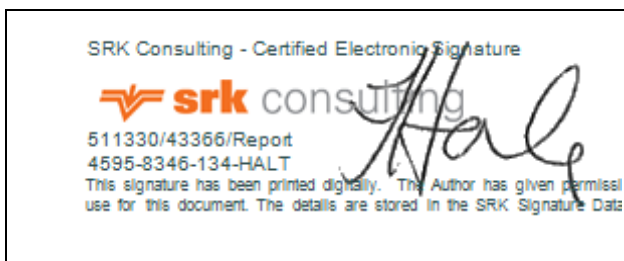
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