

## EXECUTIVE SUMMARY: DRAFT ENVIRONMENTAL IMPACT REPORT

### ENVIRONMENTAL IMPACT ASSESSMENT

#### OF PROPOSED UPGRADES TO BERTHS 601, 602, 603 AND 604 AND ASSOCIATED DEEPENING OF THE BEN SCHOEMAN DOCK, PORT OF CAPE TOWN

## 1 INTRODUCTION

As part of a programme for improving the efficiency of the Port of Cape Town, Transnet Limited ("Transnet") which includes the two divisions of the National Ports Authority of South Africa (NPA) and the South African Port Operations (SAPO), proposes to deepen the Ben Schoeman Dock (BSD) and to conduct upgrades to berths 601, 602, 603 and 604 of the BSD.

The BSD is located within the Port of Cape Town, north-east of the Duncan Dock and east of the Victoria Basin (see Figure 1). The Port of Cape Town is a modern working harbour serving Cape Town and its hinterland.

SRK Consulting (SRK) were appointed by Transnet as the independent environmental consultant to conduct the Environmental Impact Assessment (EIA) phase of the EIA for the proposed Berth Deepening project. This is required in terms of the Environment Conservation Act (ECA, Act No. 73 of 1989) and the National Environmental Management Act (NEMA, Act No. 107 of 1998).

## 2 APPROACH TO THE EIA

The proposed project entails the following activities listed in terms of the EIA Regulations<sup>1</sup>:

1. The construction, erection or upgrading of:
  - (c) with regard to any substance which is dangerous or hazardous and is controlled by national legislation-
    - ii. manufacturing, storage, handling, treatment or processing facilities for any such substance; and
  - (e) marinas, harbours and all structures below the high-water mark of the sea and marinas, harbours and associated structures on inland waters.

The EIA process stipulated in the Regulations is divided into a Scoping phase and an EIA phase.

The *Scoping phase* was undertaken by Shangoni Consulting, who submitted the Final Scoping Report to the provincial Department of Environmental Affairs and Development Planning (DEA&DP) in March 2005 for authorisation. The Scoping Report was accepted by DEA&DP in June 2005.

In August 2006, SRK were appointed by Transnet to undertake the *EIA phase* of the Berth Deepening EIA. The Plan of Study for EIA was submitted by SRK to the national Department of Environmental Affairs and Tourism (DEAT) in September 2006 and accepted by DEAT in October 2006.

The key objectives of the EIA are to:

- Inform the broadest possible range of Interested and Affected Parties (IAPs) about the proposed project and the EIA process followed;
- Obtain contributions of IAPs (including the applicant, consultants, relevant authorities and the public) and ensure that all issues, concerns and queries raised are fully documented and addressed in the report;
- Gather issues and concerns of IAPs to identify, screen and evaluate potential "fatal flaws" in the proposals<sup>2</sup>;
- Identify and assess significant impacts associated with the proposed deepening of the BSD and upgrades to berths 601, 602, 603 and 604;
- Indicate whether the two possible sites identified for the disposal of dredged material are environmentally acceptable locations;
- Formulate mitigation measures to minimise impacts and enhance benefits; and
- Produce a Final Environmental Impact Report (EIR) which helps DEAT to decide whether (and under what conditions) to authorise the proposed project.

<sup>1</sup> G.N. No. R1182, September 1997. Promulgated in terms of Section 21 of the Environment Conservation Act 73 of 1989.

<sup>2</sup> Note that the gathering of issues and concerns of IAPs to screen the proposal and identify fatal flaws was primarily undertaken by Shangoni Consulting during the Scoping phase of the project, although the issues and concerns are addressed during the EIA phase.

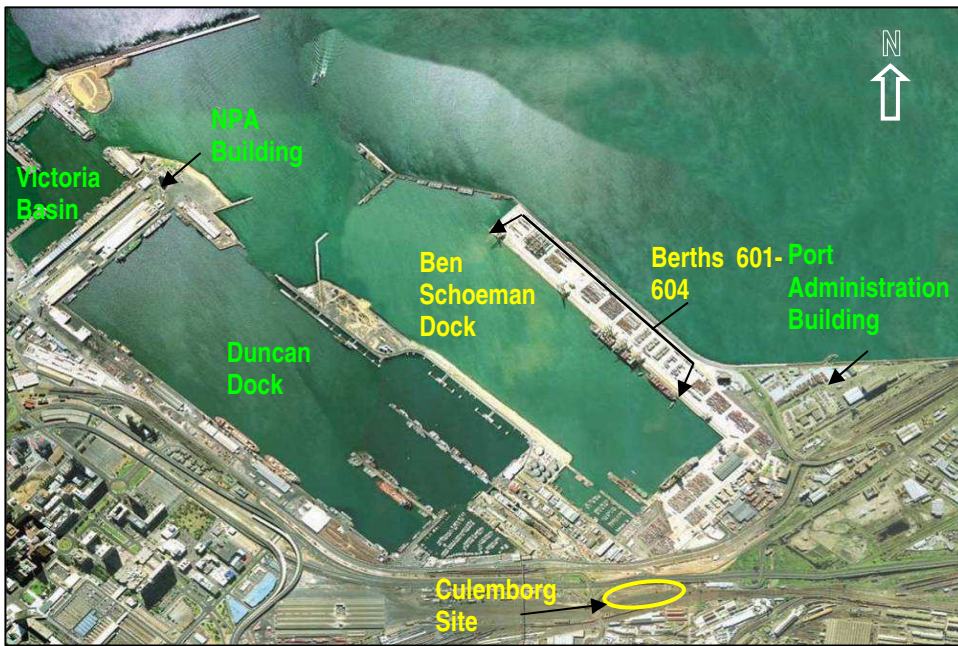


Figure 1: Aerial view of the Ben Schoeman Dock

### 3 NEED FOR THE PROJECT

There is a global trend towards the utilisation of larger container vessels. Fifth-generation container vessels, with a capacity of approximately 4 880 Twenty-foot Equivalent Units (TEU), came into service on the South African trade route since 2004. Sixth-generation vessels, with a capacity of up to 6 000 TEU, have already been designed and built.

These new generation vessels have greater working drafts (or depths) and wider beams (or widths) than conventional vessels. Various shipping lines that form part of the South African European Communities Service Conference have indicated that they will be investing in such new container vessels.

To accommodate these larger vessels at the Port of Cape Town and to remain competitive in a global environment, Transnet proposes to increase the current working depth of the basin and berths of the BSD at the Port of Cape Town and to install cranes with a wider reach.

It is expected that, once upgraded, the BSD infrastructure would be suitable for at least the next 30 years, as container vessels are built with an anticipated lifespan of 20 to 30 years.

### 4 PROJECT DESCRIPTION

Transnet proposes to undertake the following activities at the Ben Schoeman Dock within the Port of Cape Town:

- Deepen approximately 110 ha of the BSD basin from currently 10 - 15 m below Chart Datum (CD) to a depth of 15.5 m below CD by dredging approximately 1 230 000 m<sup>3</sup> of material from the basin. This also includes the dredging

of a scour trench to 17 m below CD alongside berths 601 to 604;

- Widen the deck of berths 601, 602, 603 and 604 of the BSD by 10 m and construct an additional crane rail to accommodate new container gantry cranes; and
- Replace gantry cranes with new cranes, with a higher and wider reach.

The proposed **deepening of the BSD basin** will include:

- Drilling and blasting of up to 87 000 m<sup>3</sup> of hard rock in the BSD using small parcel blasting;
- Dredging soft and loosened material using dredging equipment such as a Trailer Suction Hopper Dredger, Cutter Suction Dredger and/or Backhoe Dredger; and
- Disposing of the dredged material at a suitable offshore marine site (Refer to Section 5: Alternatives).

The proposed **upgrade of berths 601 – 604** will include:

- Constructing a concrete suspended deck quay structure supported on piles (columns) extending 10 m beyond the existing quay face into the basin at each of the four berths;
- Constructing a single crane rail at a distance of 30 m from the existing landside crane rail on the existing quay to enable the use of new super post Panamax container gantry cranes; and
- Replacing the four existing Demag cranes with six new super post Panamax cranes, resulting in an initial total of eight working cranes to offload containers at the BSD.

The berth deepening and upgrade process is scheduled to take place in phases over approximately a four year period, commencing the later half of 2007 (subject to environmental authorisation) and completing during 2011. The first phase

comprises the construction of a temporary crane rail for berths 603 and 604. The second phase entails the proposed upgrade of the berths and deepening of the dock.

The 1.8 ha Culemborg site on the Cape Town Foreshore, east of Lower Church Road between Woodstock and the Port (see Figure 1), is proposed for use as a contractors' yard, although alternative sites may need to be considered.

The intention is to allow for the storage of relatively small volumes of diesel for use by Contractors during construction related activities.

## 5 ALTERNATIVES

The “**no development**” alternative means that new generation cargo vessels would not be able to enter the Port of Cape Town due to inadequate water depth and berth infrastructure. Cargo vessels currently provide important business to the Port of Cape Town, and a reduction in the number of vessels using the Port as a result of inadequate port infrastructure is likely to threaten the global competitiveness of the Port, with a knock-on effect on other industrial and business areas that depend on income from port activities.

A number of **project aspect** alternatives were identified and considered during the Scoping phase. For most project aspects, specifically location of the project, berth alteration and blasting, one potentially viable alternative per aspect has been retained and is assessed in more detail in the EIA. Alternatives considered through the scoping process are listed in Table 1. Alternatives shaded in grey were screened out and are not assessed in the EIR.

**Table 1: Project aspect alternatives**

Aspect	Alternatives
Project	No Development alternative
Location	Ben Schoeman Dock (Port of Cape Town)
	Duncan Dock (Port of Cape Town)
	Port of Saldanha
Berth Alteration	Retain the existing quay structure
	Extend deck by 10 m into the basin
	Extend deck by 20 m into the basin
Spoil Disposal	Land-based disposal of sediment
	Deepwater disposal (40m + depth)
	Near-shore disposal (~15 m depth)
	Surf zone disposal (3 m – 5 m depth)
Blasting	Surface blasting
	Buried multiple small charges

With respect to **deepwater disposal sites** for dredged material, two alternative sites - Site 1 and Site 2 - situated approximately 13 km (at a depth of ~70 m) and 9 km (at a depth of ~40 m) from the Port respectively, were identified during the EIA phase, taking into account site characteristics such as:

- Seabed sediment composition;
- Ability of the site to contain or disperse material;
- Sensitivity of the site or areas in the vicinity;
- Potential impacts on shoreline stability; and
- Financial feasibility in terms of site distance from the Port.

Disposal of dredged material at each of these sites was assessed in the EIR.

## 6 AFFECTED ENVIRONMENT

### *Biophysical Environment:*

The Port of Cape Town is located within an area that has a Mediterranean climate with cool, wet and windy winters and warm, dry and windy summers.

The seabed of Table Bay is mainly covered by thin layers of sand but has areas of partially exposed bedrock. Surficial sediment in the Port of Cape Town is depositional and consists of fine sediments. The underlying material consists of stiff silt and soft to hard rock shale and greywacke. The two potential disposal sites for dredged material are covered by sand and mud (Site 1), surrounded by rocky reefs (Site 2).

Table Bay is located within the southern Benguela upwelling system and its circulation and water properties are characteristic of the region. Water movement within the Bay is primarily wind-driven, with shelf currents further offshore and tides playing a minor role. Wave-driven flows have an important effect in the nearshore. Two rivers, the Diep and Salt River, flow into Table Bay.

Table Bay supports well-developed biological communities that are typical of the West Coast and South Coast regions of the Western Cape. Table Bay does not appear to be critically important for marine fauna. Exceptions are endemic seabirds that occur in the bay (e.g. Bank Cormorants, African Penguin and African Black Oystercatcher).

Table Bay is a receiving environment for effluents and contaminants from port activities and stormwater outfalls from the City of Cape Town. While there is some contamination of sediments and biota adjacent to contamination sources, there is no evidence of contamination build-up in the Bay, which is regularly flushed by wave and circulation processes.

### *Socio-Economic Environment:*

The Port of Cape Town and its surroundings house various activities, such as fishing and import and export businesses. Between 4 000 and 5 000 vessels per annum utilise the port. There are a large number of shops, residential, recreational and tourism activities at the V&A Waterfront and Table Bay.

The Port of Cape Town provides a range of employment opportunities including direct employment from port-related activities such as ship repair and engineering services and businesses whose activities are unrelated to the Port.

Table Bay has heritage resources in the form of pre-historical material under water and on shore, shipwrecks and anchorage debris. Much of the resource around the Port of Cape Town has disappeared or were damaged due to previous blasting and dredging in the Port.

The mountains surrounding the City of Cape Town and Table Bay provide a number of viewpoints over the Port. As the Port is a working harbour, equipped with an extensive industrial infrastructure, the sense of place is one of a working harbour in a visually appealing context, which creates a visual character that is industrial but congruent.

The transport infrastructure within the vicinity of the Port of Cape Town comprises both a road and rail network. The roads primarily serving the port are Duncan Road, Marine Drive and the N1 Freeway.

## 7 PUBLIC PARTICIPATION PROCESS

The key activities undertaken during the Scoping and EIA phases to consult with the public regarding the proposed Berth Deepening project are summarised in Table 2.

The issues raised during the Scoping phase were either addressed in the Final Scoping Report or further investigated in the EIA phase in specialist studies (Refer to Section 8: Assessment of Potential Environmental Impacts).

**Table 2: Key Public Consultation Activities**

Activity	Date
<b>Scoping Phase (Shangoni Consulting)</b>	
Advertisement of study commencement	Date not known
Identification of key stakeholders	Apr – May 2005
Circulation of Background Information Document and pamphlets to IAPs	May 2005
Notification of IAPs of Draft Scoping Report (DSR) review period	30 May 2005
Stakeholder scoping meeting	27 May 2005
Public meeting	9 Jun 2005
Notification of IAPs of Revised DSR review period	21 - 22 Sep 2005
<b>EIA Phase (SRK)</b>	
Notification of registered IAPs of change in consultant and project scope	20 Nov 2006
Notification of IAPs of Draft Environmental Impact Report (EIR) review period	9 Feb 2007
Draft EIR review period	12 Feb –13 Mar 2007
Focus group meetings (if required)	19 Feb -2 Mar 2007
Open Day	27 Feb 2007

## 8 ASSESSMENT OF POTENTIAL ENVIRONMENTAL IMPACTS

During the Scoping process, potential environmental impacts associated with the proposed project were identified. They relate mostly to impacts from dredging activities and less so to impacts from berth upgrade activities.

In response to potentially significant impacts identified in the Scoping phase, the following eight specialist studies were undertaken during the EIA phase:

- Integrated Marine Specialist Study, *integrating the following individual marine specialist studies*:
  - Dredge Disposal Site Selection and Characterisation;
  - Dredging and Disposal of Dredge Spoil Modelling Specialist Study;
  - Sediment Toxicology and Marine Ecology Specialist Study; and
  - Shoreline Stability Specialist Study;
- Noise and Vibration Specialist Study;
- Traffic Specialist Study;
- Visual Specialist Study; and
- Maritime Archaeology Specialist Study.

For all potentially significant impacts, the significance of the anticipated impact was rated without and with recommended mitigation measures.

Table 3 below summarises:

- The impacts that were assessed in more detail in the EIA phase;
- Their significance following the implementation of mitigation measures; and
- The key mitigation measures on which the significance rating is based, where applicable.

For impacts relating to the disposal of dredged material at one of the two potential disposal sites, an assessment of the impact for each of the two sites has been undertaken. As such, separate impact ratings have been provided for each site to facilitate a comparative assessment of the suitability of each of the dredge disposal sites.

Table 3: Impact Rating Summary

Potential Impact	Status	Impact Significance (with mitigation)		Key Mitigation Measures / Recommendations
<b>Marine Impacts</b>				
<b>Impacts of dredging activities on the harbour environment</b>				
Removal of biological communities in dredge areas	-ve	Very Low		No mitigation required
Impact of sediment plumes in dredge area on organisms in the harbour	-ve	Very Low		No mitigation required
Impacts of settlement of suspended sediment and changes in sediment characteristics on sediment biota	-ve	Very Low		No mitigation required
Importation of alien species into dredge area by dredgers	-ve	Low		Apply the NPA Ballast Water Management Plan and applicable ballast water management protocols stipulated in the IMO International Convention for the Control and Management of Ship's Ballast Water and Sediments and verify implementation
<b>Impacts on dredge spoil disposal sites and surrounds</b>				
		Dredge disposal site 1	Dredge disposal site 2	
Effects of sediment deposition on benthic macrofauna	-ve	Very Low	Medium	Ensure that sediments are discharged in thin layers where possible
Alteration of benthic biological communities through toxins in dredge spoil	-ve	Very Low	Low	No feasible mitigation available
Effects of turbidity from dredge spoil disposal on habitats surrounding disposal site	-ve	Insignificant	Medium	No feasible mitigation available
Effects of sediment plumes on water quality and biota in Table Mountain National Park MPA	-ve	Insignificant	Low	No feasible mitigation available
Introduction of alien species to dredge disposal sites	-ve	Medium	Medium	Apply the NPA Ballast Water Management Plan and applicable ballast water management protocols stipulated in the IMO International Convention for the Control and Management of Ship's Ballast Water and Sediments and verify implementation
Effects of turbidity resulting from dredge spoil disposal on endangered coastal seabirds (specifically the African Penguin)	-ve	Low	Low	Ensure there is no chronic build up of turbidity in the area of the dredge disposal site through allowing sufficient time for turbidity to subside between dump events
Potential erosion of the shoreline as a result of disposal of dredge material	-ve	No impact	Insignificant	No mitigation required
<b>Impacts on existing uses in Table Bay</b>				
Deposition of sediments in existing dredge areas and/or navigation channels	-ve	Low		No feasible mitigation available

Potential Impact	Status	Impact Significance (with mitigation)	Key Mitigation Measures / Recommendations
Interference with existing shipping operations	-ve	Very Low	No feasible mitigation available
<b>Noise, Shock and Vibration Impacts</b>			
Potential increase in noise levels	-ve	Very Low	Implement normal noise control measures during construction
Impacts of shock and vibration from blasting and construction	-ve	Very Low	Lure seabirds and marine mammals out of the harbour prior to blasting Provide prior notification of blasting to people in areas surrounding the site Design and carry out blasting operations with due regard to good blasting practice
<b>Traffic Impacts</b>			
Increase in heavy vehicle traffic on external road network	-ve	Low	Where possible, schedule bulk arrivals and departures of trucks carrying construction materials outside peak commuter periods
Increase in heavy vehicle traffic on internal road network	-ve	Very Low	No mitigation required
Potential conflict between construction and train movements	-ve	Very Low	Deploy a traffic marshal at crossing of contractor's yard access road with Harbour and Paarden Eiland rail lines to communicate with train and signal operators at the central traffic control centre.
<b>Visual Impacts</b>			
Visual impacts of dredging and sediment plumes	-ve	Very Low	No mitigation required
Visual impacts of berth deck construction activities	-ve	Very Low	Implement good housekeeping during construction to reduce visual impacts of construction activities and at contractor's yard
Visual impacts of new crane installations	-ve	Low	Consider painting cranes a colour that will be least visible against the skyline (blue/grey) taking due consideration of safety implications.
<b>Impacts on Marine Archaeology</b>			
Disturbance of archaeological material that may occur in Ben Schoeman Dock	-ve	Low	Ensure where possible all archaeological material found can be recorded, recovered and stored Appoint a maritime archaeologist to periodically monitor and advise where necessary on archaeological finds Obtain necessary permits and licenses prior to removal of archaeological material

## 9 FINDINGS AND RECOMMENDATIONS

The **key findings** of the impact assessment are:

- Most activities and impacts associated with the Berth Deepening project are short term in duration;
- The majority of the potential impacts on *marine ecology* were found to be of low significance. The potential introduction of alien species to the selected dredge disposal site is considered to be of high significance without mitigation. However, this should be viewed in the context of other shipping traffic entering Table Bay, which could result in a similar effect (although possibly not specifically at the dredge disposal site). Nevertheless, the consequences of the introduction of alien species can be serious if they become invasive;
- The effects of the *disposal of dredge spoil* on the ecology and habitats at and surrounding dredge spoil disposal sites, including possible effects in the Table Mountain National Park MPA and the Robben Island exclusion zone, were found to be higher at Site 2 than at Site 1, although not to such a degree that Site 2 would be considered “fatally flawed”;
- Impacts of dredge spoil disposal on *shoreline stability* are considered negligible, provided that the dredged material is evenly distributed over the dredge disposal site so as not to cause significant “mounds” of dredge spoil that may start to influence long period waves and consequently shoreline stability;
- Due to the “instantaneous dumping” method proposed, localized *mounds of material* (expected to have peak elevations of between 0.6 to 0.7m) may be created. This would not result in shoreline stability effects at Site 1, although in terms of the precautionary principle, limited wave modeling may be required to confirm potential effects if Site 2 is selected;
- Although *sedimentation* of previously dredged areas and navigation channels is not expected to be significant, the significance and extent of this sedimentation over an extended period of time is difficult to assess. The confidence of this assessment is thus medium to low. Use of the deeper site (Site 1) would best mitigate this as sedimentation risks are minimised;
- Interference with *existing shipping traffic* will occur both within the harbour and during dredge disposal activities, although these risks can be readily managed and reduced to acceptable levels;
- Although potential impacts on water quality in the harbour were initially of concern due to the location of the sea water intake point for the *Two Oceans Aquarium* in the Victoria basin, negotiations have begun with the Aquarium regarding the monitoring of water quality and suitable mitigation measures to be put in place to allow the aquarium to run on a closed system, or receive a water supply from an alternative sources;
- During construction, the *noise impact* will be area-specific and will last for approximately three years. The 70 dBA daytime guideline for industrial districts will not be exceeded outside the site boundary. The same applies to the 60 dBA night-time guideline. The construction at the BSD will have a negligible additional effect on the existing noise levels in the nearby residential areas;
- Continuous monitoring and optimisation of *blasting* will ensure compliance with accepted vibration limits at sensitive receptors and buildings;
- Construction *traffic* associated with the delivery of materials during the construction phase of the project is expected to have minor impacts on the current traffic on the external access routes, as well as between the construction site, and the contractor’s yard at the Culemborg site;
- In terms of *visual impacts*, the proposed activities associated with the deepening of the BSD and the new super post Panamax cranes are considered to be highly consistent with current activities and congruent with activities associated with a working harbour. Sediment plumes will often be similar to those occurring naturally and will only be visible for very short periods. Although sediment plumes will be larger and more persistent at the shallower of the two sites, the significance of the visual impacts is considered to be very low in both cases; and
- The fact that the basin has been subjected to extensive dredging and blasting in the past has already resulted in destruction of a significant part of the *underwater cultural resource*.
- Dredge material in the BSD was characterized and trace metal concentrations of the sediments to be dredged were found to fall within the “special care” category in terms of the London Convention, implying that they are suitable for disposal at sea.
- In terms of the Dumping at Sea Control Act 58 of 1973, Transnet is required to obtain a permit (from DEAT) to dispose of dredge spoil at sea.

The **general recommendations** of the EIR are to:

- Commit to and effectively implement the essential mitigation measures listed in the EIR;
- Consider implementing the optional mitigation measures listed in the EIR;
- Formulate and implement an Environmental Management Plan (EMP) for the construction and operational phase of the project (if approved), incorporating:
  - Methods to mitigate environmental impacts during construction; and

- Assigned responsibilities for the implementation of the EMP;
- Apply for the necessary permit for the disposal of dredge spoil at sea from DEAT, prior to such disposal taking place;
- Apply for the necessary permits from SAHRA in the case that material of cultural value is encountered;
- Formulate or make known a mechanism to receive and address complaints; and
- Continue to keep local stakeholders informed of future plans in this regard.

SRK believes that sufficient information is available for DEAT to take a decision. If DEAT accepts that the proposed upgrades to the BSD are required to accommodate new generation vessels, DEAT must decide which of the two sites evaluated for the disposal of dredged material would be most suitable (environmentally), or if either site is considered suitable.

SRK believes that the specialist studies have shown clearly that the proposed upgrades to the BSD, as well as the disposal of dredge spoil at either of the two disposal sites, would be environmentally acceptable, assuming the recommended mitigation measures are implemented.

## 10 WAY FORWARD

The Draft EIR has identified and assessed potential impacts associated with the proposed Berth Deepening project. It is not a final report and will be amended based on comments received from IAPs. Further opportunities to comment on the Draft EIR are indicated below.



**SHARON JONES**  
Environmental Consultant

The Executive Summary of the Draft EIR has been sent to all identified IAPs. The EIR is being released for a 30-day review period commencing 12 February 2007 and ending on 13 March 2007. The full report and appended specialist studies can be viewed as follows:

- At the Cape Town public Library;
- At the Milnerton public Library
- At the SRK Office, Rondebosch, Cape Town;
- As an electronic copy on Transnet's website [www.transnet.co.za/TransnetProjects.aspx](http://www.transnet.co.za/TransnetProjects.aspx); and
- Upon request, full hard copies of the Draft EIR can also be mailed to stakeholders at a cost of approximately R250 (incl. VAT) and / or a copy (excluding maps, diagrams and appendices) can be emailed free of charge. A CD can also be prepared and mailed at a cost of R30.

IAPs are also invited to attend a **Public Open Day**:

Venue: 10th Floor, NPA House, Port of Cape Town  
Date: 27 February 2007  
Time: 15h00 – 19h00

Written comments on the Draft EIR should be submitted by **13 March 2007** to:

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