

Scoping Report: A review of available information of operations at the Manganese Ore Terminal and Storage Facility and Tank Farm on Erf 578 at the Port Elizabeth Harbour area with emphasis on environmental transgressions

Project Title:

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Structure of the Document

The Executive Summary presents an overview of the key issues identified by the project team as well as a way forward.

Readers wishing to obtain a better understanding of the issues or requiring more details should read Chapters 1 to 4.

Executive Summary

Introduction

Linkd Environmental Services (Pty) Ltd. was appointed by the Port Elizabeth Regional Chamber of Commerce and Industry to undertake a review of available information on environmental issues at the Manganese Ore Terminal and Storage Facility and Tank Farm at the Port Elizabeth Harbour, and to advise on the legal strategy to be pursued. A team of consultants was constituted to undertake an initial scoping report. The consultant team consisted of:

- Mike Cohen of CEN Integrated Environmental Management Unit, who has led the environmental assessment and drafted the report.
- Rob Parker of Pagdens Attorneys, who has provided legal advice.
- Janet Cherry and Therese Boulle, who have advised on the public participation process.
- Crispian Olver of LinkD Environmental Services, who has been the project manager for the assignment.

The Manganese Ore Terminal and Storage Facility and Tank Farm at the Port Elizabeth Harbour are situated on Erf 578 to the south of the harbour and are operated by Transnet Port Terminals.

The purpose of this review is to determine whether daily operations at these facilities are in contravention of environmental legislation and / or regulations, and to highlight key problem areas from both an environmental and human health and safety perspective. Based on the outcomes of this review, a plan of action is recommended which indicates what further investigations are required.

Several investigations have been done and reports published detailing areas of environmental health concern arising at these facilities and in adjacent receiving environments as a result thereof. This report has collated this information and indicated where the facilities are in breach of local municipal by-laws, provincial and national regulations and legislation. Where actual pollutant data is available, it has been compared with either national (where available) or international published threshold and / or target values for environmental and human safety.

Manganese Ore Terminal and Storage Facility

The environmental pollution arising from the manganese ore terminal and storage facility arises from air pollution by manganese ore dust, groundwater contamination from manganese storage, and contamination of the coastal environment by manganese ore.

The last measurement made on air quality by the local authority in the vicinity of the facility was in 1992, and no subsequent data on air pollution is available. At the time, manganese levels measured were believed not to pose a risk to human health. However, there is far more knowledge available on the risks of manganese, including safe exposure levels. A spot sample taken of the ore dust in 2005 showed that a suite of potentially toxic heavy metals is present, and the risks are therefore not limited to manganese alone. Until such a time as quantitative measurable data is available, it is difficult to say with certainty that the ore facility is in contravention of municipal by-laws and other pieces of legislature from an air pollution and human health perspective. It is imperative that Transnet or the municipality install an air quality monitoring system as soon as possible, whereby measurements are made at the facility and at various points where the general public is potentially at risk of being exposed to the dust via inhalation. Levels measured must be compared with exposure limits set by the WHO ($0.15 \mu\text{g}\cdot\text{m}^{-3}$ averaged out over a year).

Quantitative evidence is available on manganese contamination in the coastal environment. McLachlan (1979) measured a detrimental effect on physical parameters at Kings Beach as a result of manganese and iron ore dust contamination. Fatoki and Mathabatha (2001) measured manganese levels in the harbour seawater that ranged from **0.7 to 16.8 mg.l⁻¹**. There are no water quality guidelines for the nearshore coastal environment specified for manganese in South Africa, however the wastewater limit values set by DWAF for discharge of water into a water resource can be used as a guide as what should be considered non-harmful to the environment. For manganese, both the general and special limit standard is set at **0.1 mg.l⁻¹**. The maximum value recorded in the Port Elizabeth harbour (**16.8 mg.l⁻¹**) is evidently far higher than this. According to the World Health Organisation, concentrations of dissolved manganese in natural waters that are essentially free of anthropogenic inputs can range from 10 to >10 000 µg/litre. However, dissolved manganese concentrations in natural surface waters rarely exceed 1000 µg/litre (1 mg.l⁻¹) and are usually less than 200 µg/litre (0.2 mg.l⁻¹)

The legitimacy of current operations at the Manganese Ore Facility can be questioned on the following grounds:

- ✿ A certificate for the Manganese Ore Facility to operate was issued in March 1992. This certificate listed specific mitigation measures to be followed for dust suppression. It is questionable whether these are being followed, based on observations of black ore dust on Kings Beach as well as complaints from nearby residents of dust in their homes.
- ✿ There is storage capacity for 460 000 tonnes of ore on site, and a capacity to process up to 3.6 mtpa. This is currently being upgraded to a capacity of 4.2 mtpa for completion at the end of August 2009 (Olver, 2008). According to Transnet, the original permit for the ore facility permits a maximum capacity of 6 mtpa and therefore an Environmental Impact Assessment (EIA) is not needed for the upgrade.

However, when considering the National Environmental Management Act 107 of

1998 and EIA Regulations (2006), as well as provisions of the Air Quality Act 39 of 2004 and the National Framework for Air Quality Monitoring (2007), the legitimacy of this upgrade without an environmental assessment is questionable. One of the major considerations in any EIA will be the increased volume of ore moving through the facility and the potential for detrimental effect this would have on the environment, especially as a result of greater dust emissions. The EIA Regulations (2006) place a strong emphasis on public participation in any EIA process, and persons living in surrounding areas (Humewood and Summerstrand) as well as recreational beach users should certainly be offered an opportunity to give their input in this regard. According to the National Environmental Management Act 107 of 1998 and the EIA Regulations of 2006, an Environmental Impact Assessment may have been needed to undertake such an activity.

As a first step the Department of Environmental Affairs and Tourism (DEAT) (National) and the Department of Economic Development and Environmental Affairs (DEDEA) must be consulted to determine whether an EIA is required for the current upgrade. If this is indeed the case, all activities on site should immediately be stopped. The following listed activities in GNR 386 and 387 are potentially applicable:

- **GNR 386:**
 - 1(b): The construction of facilities or infrastructure, including associated structures or infrastructure, for the above ground storage of 1 000 tons or more but less than 100 000 tons of ore
 - 25: The expansion of or changes to existing facilities for any process or activity, which requires an amendment of an existing permit or license or a new permit or license in terms of legislation governing the release of emissions, pollution, effluent
- **GNR 387:**

- 1(e): The construction of facilities or infrastructure, including associated structures or infrastructure, for any process or activity which requires a permit or license in terms of legislation governing the generation or release of emissions, pollution, effluent or waste and which is not identified in Government Notice No. R. 386 of 2006
- ✿ Manganese is classified as a Listed Activity in terms of Section 21 of the Air Quality Act. Industries that involve Listed Activities have various legal obligations, including:
- Making application for an Atmospheric Emission Licence (AEL) and complying with its provisions.
 - Compliance with any minimum emission standards in respect of a substance or mixture of substances identified as resulting from a listed activity.
 - Designation of an Emission Control Officer if required to do so.

The Manganese Ore Facility has a permit in terms of the previous Air Pollution Prevention Act, and the Air Quality Act has made interim arrangements for the continuity of such APPA permits. The Department of Environmental Affairs and Tourism is currently reviewing the permit conditions on the basis of complaints received from members of the public. An investigation must be undertaken to determine whether this APPA permit meets the requirements set in terms of the Air Quality Act, and what operational management systems are in place to ensure compliance with minimum air emission standards.

The Tank Farm

Ample quantitative data is available to prove that the Tank Farm is causing pollution that is in excess of national and international water quality guidelines. From a human safety perspective, operations at the Tank Farm can be considered unsuitable in terms of

meeting Control of Major Accident and Hazard Regulations (COMAH) (1999). In its current status, the Tank Farm falls far short of the COMAH Regulations. Current operational procedures that are matters of concern include the following:

- ✿ Overfill of tanks reported by Kantey and Templer (2005)
- ✿ The lifespan of fuel storage tanks on site has been exceeded. The average lifespan of a fuel tank in the current environment is ~35 years. The location of the Tank Farm in close proximity to the marine environment shortens this time owing to corrosion. The first tanks at the Tank Farm were built in 1939 and the last in 1963, making them at least 45 years and in many cases older (Olver, 2008).
- ✿ The steel plate of a tank varies in thickness from 10 mm at base to 6 mm at upper rim. Corrosion of lower plates down to 6-8 mm is highly likely. This constitutes a rupture threat (Olver, 2008).
- ✿ The primary and secondary containment mechanisms for the tank farm do not meet modern safety and environmental standards. The bund floors are built with paving stones and are therefore pervious. The end result of leakage will be that the fuel ends up in the harbour (Olver, 2008).
- ✿ A recent investigation found that the jet fuel pipeline to the airport failed seismic tests (Olver, 2008).
- ✿ The integrity of tank farm fire control systems is questionable since it is salt water based and was installed over 20 years ago (Olver, 2008).

Kantey and Templer (2005), in their investigation of the Tank Farm, noted several indications of contamination on site, including:

- ✿ Stains on the ground surface indicating spillage
- ✿ Oil spills in waterways
- ✿ Burial of sludge on site
- ✿ Hydrocarbon odours below ground level

- ✿ Laboratory analyses of contamination of soil and groundwater samples as a result of activities on site, yielded results that were in excess of safe human and ecological exposure values

In addition to this, numerous minor and major spills are on record from 1998 to 2005, two of which are ongoing (Kantey and Templer, 2005).

It is likely that the following hydrocarbon contamination at the petro-chemical storage area and terminals at the Tank Farm is present as a result of activities undertaken at the tank farm (after Shipley, 2005):

- Contaminated soil
- Free product layers on the local water table
- Dissolved and emulsified hydrocarbons in the groundwater
- Smear zone through tidal action
- Polyaromatic hydrocarbons (PAHs) in soils
- Volatile gases

The SAB Institute for Environmental and Coastal Management published a series of documents between November 2002 and October 2003 of seawater quality in the harbour vicinity. BTEX and Polycyclic Aromatic Hydrocarbon levels measured at various stations exceeded either national or international water quality guidelines from both a human safety and ecological requirement perspective, on four separate occasions. The Bulk Cargo Quay and Tanker Berth was implicated as being the source of this contamination in these reports. Pollution levels in excess of recreational safety guidelines were measured outside of the harbour area as well, indicating that the contamination effect could potentially have implications for beach users at certain times of the year.

Legal Strategy to be pursued

Based on evidence presented in this report, it is likely that both facilities are in contravention of the following:

- ✿ The Constitution
- ✿ National Environmental Management Act No 107 of 1998: Section 28
- ✿ NEMA: Air Quality Act No 39 of 2004: Section 21
- ✿ National Health Act No 61 of 2003
- ✿ National Water Act No 36 of 1998
- ✿ Marine Living Resources Act No 18 of 1998
- ✿ Environmental Conservation Act No 73 of 1989
- ✿ Nelson Mandela Bay Metropolitan Municipality Municipal Health By-Law
- ✿ Nelson Mandela Bay Municipality Waste Management By-Laws
- ✿ Waste Management Bill (2008)
- ✿ Integrated Coastal Management Bill (2007)
- ✿ Environmental Impact Assessment Regulations (2006)

In order to successfully pursue legal action against Transnet, legal advice has been sought, and it is recommended that the following course of action is followed:-

- A request to Transnet in terms of the Public Access to Information Act has been submitted, in order to obtain the available information regarding current permits, levels of pollution, upgrading plans and remediation activities.

- Certain additional investigation is required in order supplement the available data on environmental pollution. This will enable us to accurately determine and document the facts and information pertaining to pollution by the manganese ore terminal and tank farm.
- The Department of Environmental Affairs & Tourism (national) and the Department of Economic Affairs, Environment & Tourism (provincial) should be requested to direct measures to prevent the pollution from continuing and to prevent the current upgrade to the manganese terminal from continuing without an EIA, and to enforce such measures, as envisaged in terms of section 28 of NEMA.
- In the event of the department's failing to act, demand should be made on both Transnet and the departments listed above to ensure that measures are implemented to prevent the pollution, and that the current upgrade to the manganese terminal should cease until such time as a proper EIA has been done.
- In the event that the demands are not adhered to, consideration be given to bringing an application for an order directing and compelling both Transnet and the departments to implement the necessary remedial measures.

Stakeholder consultation

This report has identified a wide variety of stakeholders that have an interest in the environmental issues associated with the Port Elizabeth manganese ore terminal and tank farm. There is significant value to be obtained from soliciting their involvement and input into the process. It is proposed that a structured stakeholder forum is established, and that a budget is set aside to support the stakeholder involvement. It is estimated that the cost of a full stakeholder consultation exercise will be approximately R100 000.

As a first and urgent step, it is proposed that initial consultation and lobbying be conducted with the following key stakeholders:

- Provincial Department of Economic Development and Environmental Affairs regarding compliance by Transnet with EIA regulations.
- Nelson Mandela Bay Municipality regarding gathering of information and samples of environmental pollution.

Thereafter consultation should extend to directly affected civil society groups: workers, residents and businesses affected by issues relating to manganese ore and the tank farm. The following phases have been proposed for the stakeholder consultation process:

1. Identification and prioritization of stakeholders (Phase 1)
2. Consultation and lobbying with key stakeholders about key issues, need for stakeholder forum, obtaining 'buy in' to broad stakeholder forum (Phase 2)
3. Refine and assess stakeholder identification based on initial consultation
4. Establish a data base of stakeholders
5. Establishment of stakeholder forum
6. Ongoing management of stakeholder forum and sharing of information through mechanisms such as website and public forums.

The way forward

It is clear that both the Manganese Ore Terminal and Storage Facility and Tank Farm are at present creating significant environmental harm and resultant human health impacts. Both operations are in breach of several pieces of national, provincial and municipal legislation. In order to successfully pursue a legal strategy to address the issues raised in this report, a number of actions have been identified in order to fill gaps in knowledge.

It is recommended that two phases to the work following this scoping report are followed.

In the first phase, the following actions are required:

- Obtain requested information from Transnet in terms of Public Access to Information Act.
- Factual information must be gathered regarding dust from the manganese ore facility, the levels of manganese in groundwater, manganese levels in beach sediments, and the compliance of operations at the Tank Farm with COMAH Regulations.
- The Nelson Mandela Bay Metropolitan Municipality must be consulted to solicit their support for the above investigations, and to engage them in the process of collecting and analysing samples.
- The Department of Economic Development and Environmental Affairs must be consulted to determine whether the current upgrading of the manganese ore facility is legal in terms of the NEMA and EIA Regulations (2006).
- Further analytical and legal work is required to determine whether the manganese ore facility has a valid Air Emission Licence, and whether the Tank Farm site should be declared an 'investigation area' in terms of the Waste Management Act (2009).

The second phase will follow from the above investigations, and will consist of the substantive legal actions that are required to prevent further environmental transgressions, as well as a broader stakeholder consultation process.

A grey square graphic containing the word "Chapter" in bold black text at the top and a large white number "1" in the center.

Chapter 1: Manganese Ore Terminal and Storage Facility

The manganese ore terminal and storage facility is situated on Erf 578 just south of the Port Elizabeth harbour. The facility is owned by Transnet National Ports Authority and is operated by Transnet Port Terminals.

The major concern around this facility is the large quantities of manganese ore dust that it produces. This dust potentially impacts on the health of residents downwind thereof (Humewood and Summerstrand), recreational beach users at Kings Beach, and employees at the facility and surrounding ventures. In addition to this, manganese and associated compounds impact on the adjacent marine environment, particularly in the supratidal and nearshore environment.

Shiple (2005) noted that potential contamination caused by the manganese ore facility includes:

- ✿ Heavy metal contamination, which, while relatively immobile and low risk, will require physical isolation and coverage with clean material.
- ✿ Contamination of estuarine silts from both the above sources and discharged ballast.

1.1 Legislation and guidelines pertaining to manganese

There are no municipal by-laws with regards to air pollution control in the Nelson Mandela Bay Municipality; rather the Air Quality Act 39 of 2004 is the governing legislation.

Municipal by-laws do exist for Health and Waste Management, both of which are applicable to operations at the Manganese Facility and place heavy responsibility on the polluter.

1.2 Legitimacy of the Current Capacity Upgrade

There is storage capacity for 460 000 tonnes of ore on site, and a capacity to process up to 3.6 mtpa. This is currently being upgraded to a capacity of 4.2 mtpa for completion at the end of August 2009 (Olver, 2008).

According to Transnet, the original permit for the ore facility permits a maximum capacity of 6 mtpa and therefore an Environmental Impact Assessment (EIA) is not needed for the upgrade. However, when considering the National Environmental Management Act 107 of 1998 and EIA Regulations (2006), as well as provisions of the Air Quality Act 39 of 2004 and the National Framework for Air Quality Monitoring (2007), the legitimacy of this upgrade is questionable.

One of the major considerations in any EIA will be the increased volume of ore moving through the facility and the potential for detrimental effect this would have on the environment, especially as a result of greater dust emissions. The EIA Regulations (2006) place a strong emphasis on public participation in any EIA process, and persons

living in surrounding areas (Humewood and Summerstrand) as well as recreational beach users should certainly be offered an opportunity to give their input in this regard.

1.2.1 National Environmental Management Act 107 of 1998

According to the National Environmental Management Act 107 of 1998 and the EIA Regulations of 2006, an Environmental Impact Assessment is needed to undertake such an activity. This is evident from the following listed activities in GNR 386 and 387:

✿ GNR 386:

- 1(b): The construction of facilities or infrastructure, including associated structures or infrastructure, for the the above ground storage of 1 000 tons or more but less than 100 000 tons of ore
- 25: The expansion of or changes to existing facilities for any process or activity, which requires an amendment of an existing permit or license or a new permit or license in terms of legislation governing the release of emissions, pollution, effluent

✿ GNR 387:

- 1(e): The construction of facilities or infrastructure, including associated structures or infrastructure, for any process or activity which requires a permit or license in terms of legislation governing the generation or release of emissions, pollution, effluent or waste and which is not identified in Government Notice No. R. 386 of 2006

1.2.2 National Framework for Air Quality Monitoring (2007)

One of the tools for controlling industrial emissions to the atmosphere is the traditional permit or licence which identifies activities that may only operate if they are correctly permitted to do so by the regulatory authority, and only if the conditions set in the permit

or licence are met. This form of regulation was the basis for regulatory control of industrial emissions in terms of the Atmospheric Pollution Prevention Act 45 of 1965 (APPA) and has been repeated, with some significant modifications, in the Air Quality Act 39 of 2004 (AQA).

Section 21 of the AQA states that the Minister must publish a list of activities which result in atmospheric emissions and which it is reasonably believed have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage. The list applies nationally. The MEC may publish a list of activities which applies to the relevant province only. Once identified, these activities are known as Listed Activities and require an **Atmospheric Emission Licence or provisional AEL in order to operate**.

A revision of the 'Listed Activities and Minimum Emission Standards' was published on 27 February 2008 by DEAT. **Manganese is published as a listed activity under the category of 'Metallurgical Industry'**.

Industries identified as Listed Activities have further responsibilities, including:

- ✿ Making application for an Atmospheric Emission Licence (AEL) and complying with its provisions.
- ✿ Compliance with any minimum emission standards in respect of a substance or mixture of substances identified as resulting from a listed activity.
- ✿ Designate an Emission Control Officer if required to do so.

The Minister may declare any substance contributing to air pollution as a **priority air pollutant** and require persons falling within a specified category to submit and implement a **pollution prevention plan** in respect of the priority air pollutant (Section 29(1)). Upon declaration as a **priority pollutant** the emitter may be required to prepare

and submit a **pollution prevention** plan to the Minister or MEC. **Manganese is considered a priority pollutant of local concern.**

1.2.3 Waste Management Bill (2008)

In terms of the Waste Management Bill (2008) the landowner of land that is regarded as significantly contaminated is obliged to report this to the Minister, as soon as he becomes aware of it (or ought to have been aware of it). Land on which specific high risk activities are / have taken place, or land that the Minister/MEC reasonably believes may be contaminated, may be identified and listed by the authorities as an 'investigation area'. Once a 'contaminated site' has been identified, the landowner will have to initiate an assessment of the 'environmental footprint' of the site. If the assessment confirms the site is contaminated, it will be placed on a contaminated land register. If no immediate risk is found, only monitoring / management is required. If remediation is urgent, the Minister/MEC must declare the land a 'remediation site' and must make an order regarding measures to be taken.

By inference, both the National Ports Authority and Transnet should be aware of the contaminated status of the land on which they are operating and by law should report this to the Minister/MEC. In terms of the 'duty of care' principle of NEMA, routine pollution monitoring should be undertaken by the facility and this should inform them of their pollution status.

To summarise then, based on the listed activities under NEMA, the upgrade of the manganese ore facility should have undertaken an EIA prior to commencing with the activity and is thus an illegal activity. Also, to be in line with the Air Quality Act, the facility needs to have an Air Emission Licence in place. The Waste Management Bill (2008) places responsibility on the landowner to report the pollution status of his/her land to the Minister/MEC for further investigation. Based on the outcomes of further investigations, the land may in effect be 'sterilised' from any further operation until the situation is remedied.

The registration certificate that was issued for the facility to operate in March 1992 listed specific mitigation measures to be followed for dust suppression (Shiple, 2005). It is evident that these are not in place.

1.3 Dust Monitoring

The City of Port Elizabeth used to do routine monitoring of dust from the Manganese Ore Facility, but stopped after 1992 (Shiple, 2005). Monitoring of dust done between 1985 and 1993 showed dust fallout to be insignificant and of no significant health impact (Shiple, 2005). However, the standards that were being used at the time did not take account of the large body of research on the matter which has become available in the last decade (Olver, 2008).

In 2005, spot tests done of manganese dust showed the presence of trace elements, including chromium, copper, nickel, lead, selenium, thallium and zinc (Shiple, 2005). Therefore the toxicological hazard extends beyond merely manganese.

A report was done by the NMMM in 2005: “A report prepared by the NMMM on an Alleged Dust Nuisance at the Manganese Ore Bulk Terminal”. A request has been made of National DEAT to make this report available. Also, the local authority has been approached to release data recorded during routine dust monitoring done by the City of Port Elizabeth until 1992. Only when this data is available can it objectively be determined, by comparing measured values with those specified by the World Health Organisation as Guideline Values, whether ore dust from the manganese facility is creating a significant health problem.

1.3.1 Guideline Values for Manganese

In order to conform to best international practice, the quantity of particulate dust and any potential impact it may have on the area surrounding the source can be determined by gathering and analyzing samples of the dust and then comparing measured

concentrations to accepted standards such as the World Health Organisation's Guideline Values for Individual Substances Based on Effects Other than Cancer or Odour/Annoyance which recognises an exposure limit of $0.15 \mu\text{g}/\text{m}^3$ averaged out over 1 year. The UK's Occupational Exposure Limits as stated in Guidance Note EH40/2002 (long term exposure limit) for manganese / manganese compounds is $5\text{mg}/\text{m}^3$ (8 hour average) (Shipley, 2005).

Manganese is not specified per se in the Ambient Air Quality Standards for Common Air Pollutants in South Africa. However, a 24 hour maximum standard for Particulate Matter of $75 \mu\text{g}/\text{m}^3$ is given.

1.3.2 Effects of ore dust on human health

Particulate air pollution from manganese ore is associated with a range of effects on health, including effects on respiratory, neurological and cardiovascular systems. A wide range of medical research backs up these findings. The WHO has issued guideline values which recognise an exposure limit of $0.15 \mu\text{g}.\text{m}^{-3}$ averaged out over a year (Olver 2008).

1.3.3 Effects of ore dust on the coastal environment

Wind blown ore dust has significant effects on physical and chemical properties of sandy beaches. Westerly winds scatter dust, blown off the ore dumps, over the western part of Kings Beach. This pollution is visible as dark patches of sand on the upper beach and appears to be very heavy in areas close to the ore dumps. In an investigation done on the effect of wind-blown iron and manganese ore dust on the upper part of the sandy beach, the following was found:

- fine ore dust reduced the porosity and permeability of the sand by clogging the interstices

- ✿ the presence of ore dust also greatly increased the rate of heating and cooling of beach sand
- ✿ ore dust was found to inhibit the action of aerobic bacteria, probably due to iron and manganese forming oxidation-reduction combinations in the sand (McLachlan, 1974).

Experiments were done on the north-facing slopes of St Croix Island in Algoa Bay to determine the effects of iron ore dust particles on intertidal animals. No short term mortalities were noted, however ore coating changes the colour animals and it would appear that colour is one of the important mechanisms controlling the heat budget even after two full tide cycles, when exposed to direct sunlight during low tide, the treated animals heated faster, reached higher temperatures and cooled faster than controls.

Results indicated that relatively small amounts of dust increase the solar heat load on intertidal animals. This may affect such aspects as vertical distribution, maximum temperature tolerance and desiccation resistance, thereby decreasing environmental fitness (Erasmus and De Villiers, 1982).

Chapter

2

Chapter 2: Tank Farm

The Tank Farm is located on Erf 578, together with the manganese ore storage facility and is leased from the National Ports Authority in terms of various lease agreements from the oil companies.

The tank farm consists of 56 storage tanks with an average size of 1.5 to 1.6 million litres. There are two tanks with a capacity of 6 million litres, and one tank with a capacity of 13 million litres. The average height of the tanks is 16m. There are also two 1000m³ LPG gas spheres, which have been recently recommissioned by Easigas and Afrox. The fuel products stored at the tank farm are diesel (AGO), unleaded petrol (ULP95), jet fuel, illuminating paraffin, heavy fuel oil, feedstock and Aldorax (Olver, 2008).

2.1 Operational Shortfalls of the Tank Farm and the UK Control of Major Accident Hazard Regulations

Shiple (2005) noted that the tank farm site is in a sensitive location next to the CBD, and therefore that safety controls and emergency procedures need to be stringently adhered to. They recommend that the 1999 UK Control of Major Accident Hazards regulations should apply, and that an independent review and update of the risks

associated with the installation should be undertaken. In particular they recommend a review of the external and internal emergency procedures, site security and the potential threat of terrorism, access and proximity control, and ongoing monitoring arrangements. To date these recommendations have not been acted upon (Olver, 2008).

In its current status, the Tank Farm falls far short of the COMAH Regulations. Current operational procedures that are matters of concern include the following:

- ✿ Overfill of tanks reported by Kantey and Templer (2005)
- ✿ The lifespan of fuel storage tanks on site has been exceeded. The average lifespan of a fuel tank in the current environment is ~35 years. The location of the Tank Farm in close proximity to the marine environment shortens this time owing to corrosion. The first tanks at the Tank Farm were built in 1939 and the last in 1963, making them 45 years and older (Olver, 2008).
- ✿ The steel plate of a tank varies in thickness from 10 mm at base to 6 mm at upper rim. Corrosion of lower plates down to 6-8 mm is highly likely. This constitutes a rupture threat (Olver, 2008).
- ✿ The primary and secondary containment mechanisms for the tank farm do not meet modern safety and environmental standards. The bund floors are built with paving stones and are therefore pervious. The end result of leakage will be that the fuel ends up in the harbour (Olver, 2008).
- ✿ A recent investigation found that the jet fuel pipeline to airport failed seismic tests (Olver, 2008).
- ✿ The integrity of tank farm fire control systems is questionable since it is salt water based and was installed over 20 years ago (Olver, 2008).

2.2 Records of spills and evidence of product leakage and/or seepage

During a survey done of the Tank Farm by Kantey and Templer in 2005, the following evidence of potential sources of contamination was noted:

- ✿ spillage on the ground surface at 3 different areas evident by stains
- ✿ black oil spills in waterways
- ✿ burial of sludge on site at three different areas – this sludge is from leaded fuel and has a high heavy metal content (Olver, 2008)
- ✿ soil staining was noted below ground level at depths from 0.3 to 2.2 m bgl
- ✿ moderate to strong hydrocarbon odours were recorded in in soil below ground level
- ✿ soil vapour phase hydrocarbon levels measured in soil ranged from 160 to 1047 ppm
- ✿ gasoline range organic concentrations recorded **exceeded ecological risk levels** in certain soil samples
- ✿ gasoline range organic concentrations recorded **exceeded RBCA Tier 1 screening levels for the human exposure pathway of ingestion of groundwater impacted by leachate from contaminated soil in certain soil samples and inhalation of indoor air vapours**
- ✿ diesel range hydrocarbon concentrations were found **to exceed ecological risk levels** in certain samples
- ✿ diesel range organic compound concentrations were recorded which may **pose risks to a marine ecosystem**
- ✿ free phase hydrocarbon is present in the subsurface in certain areas
- ✿ free phase product evident on groundwater surface

- ✿ numerous major and minor oils spills were
- ✿ Hydrocarbon concentrations were found in both groundwater samples with concentrations exceeding RBCA Tier 1 screening levels for the human exposure pathways of ingestion of groundwater and inhalation of indoor air vapours impacted by hydrocarbon contamination

Shiple (2005) conclude that it is likely that concentrations of hydrocarbons in the ground and the groundwater are as a result of spillages within the petro-chemical storage area. It is possible that these contaminants have migrated off site. This point is acknowledged in the 2003 Port Development Framework Plan where it states, *“Drainage: Rain onto the area runs into the port, and increases heavy metal levels in the sediments which could impact on applications for permissions to dump dredges spoil at sea.”*

The following major and minor spills petro-chemical and fuel spills have been recorded (Shiple, 2005) in the time period from 1998 to 2005:

- ✿ There have been various minor spills (~ 100 litres) at the following areas:
 - The road loading gantry;
 - The rail tank car loading gantry;
 - Inlet discharge manifold numbers 1 and 2;
 - Boiler house - numerous spills of Heavy Furnace Fuel (HFF) at the loading point; and
 - Next to LPG spheres minor leaks at the Gasoil Pump Slab.
- ✿ **Major Spills**
 - Next to Tank 32 - 30m³ of 93 octane unleaded fuel

- Tank 5 - 8m³ spill of JET A1 (due to overfilling tanks);
- Next to tank 30 - White Spirit(LAWS) spill due to pipe corrosion - 5000 litres
- Next to LPG spheres there was seepage of various products (diesel, mogas, LAWS) - 3000 litres. It is understood that this problem is ongoing.
- At the fishing boat bunkering jetty, product leaking under jetty - monitoring wells installed and monitored. It is understood that this problem is ongoing.

It should be noted that the results of 2 of these recorded spills are ongoing and that the above schedule is only representative for part of the site over the past 7 years. No record was available of the previous 50 or 60 years since the site has been operational (Shiple, 2005).

It appears that historical estimates of leakage are also routinely underreported. This is partly due to fluctuations in the volume of the oil due to temperature changes – a 1° change in temperature can result in a 10 000 litre difference in volume, making losses as measured by the level in the tank very difficult to estimate (Olver, 2008).

2.3 The receiving environment

Runoff from the Tank Farm currently drains into an underground drainage system, and flows into the harbour via a drain in the southern most part of the harbour. There is also a bund drainage berm and wetland to the south of the tank farm which collects waste water flowing from west to east. The ground water is also very shallow, and it is likely that contamination will remain on the site for considerable periods of time (Olver, 2008).

Based on the poor operating procedures detailed above and substantial evidence of spillage and consequent groundwater and soil contamination, the potential for

pollution of water in the harbour and the receiving coastal environment is highly likely. The sections below will present evidence of exactly this.

A series of reports on seawater quality in the port of Port Elizabeth were published by the SAB Institute for Environmental and Coastal Management. The objective of the water quality monitoring was to contribute to the Port Authority's ISO 14001 Environmental Management System, and in particular the management of tenants. Water quality variables tested include physic-chemical characteristics, nutrients, sewage contamination, chlorophyll and petroleum hydrocarbons (Total BTEX and PAHs). **The latter is most relevant to this investigation and results of these variables will be presented below.** Samples were collected at neap tide at a depth of 1 metre to represent the worst case scenario. Figure 1 shows the location of sampling stations.

Figure 1: Study site and sampling stations for water quality monitoring during November 2002 and March 2003, and July and October 2003, respectively (Source: Bornman, 2003)



Stations	GPS co-ordinates	Stations	GPS co-ordinates
A1	Orient mooring	A5	33° 57' 853" S 25° 37' 923" E
A2	33° 57' 853" S 25° 38' 277" E	A6	33° 57' 911" S 25° 38' 442" E
A3	33° 58' 012" S 25° 38' 315" E	E1	33° 57' 390" S 25° 38' 640" E
A4	33° 57' 756" S 25° 38' 659" E	B1	33° 57' 279" S 25° 38' 742" E



Stations	GPS co-ordinates	Stations	GPS co-ordinates
A1	33° 57' 41.8" S 25° 37' 50.3" E	A5	33° 57' 853" S 25° 37' 923" E
A2	33° 57' 853" S 25° 38' 277" E	A6	33° 57' 911" S 25° 38' 442" E
A3	33° 58' 012" S 25° 38' 315" E	E1	33° 57' 390" S 25° 38' 640" E
A4	33° 57' 756" S 25° 38' 659" E	B1 (new)	33° 57' 46.1" S 25° 38' 49.9" E

Petroleum hydrocarbons contain a wide range of substances that are potential health hazards. During the degradation of petroleum hydrocarbons, dissolved oxygen levels in the water are reduced, which may have an impact on the marine life. Oxidation or degradation of petroleum hydrocarbons depends on the ambient dissolved oxygen concentrations. No target values for petroleum hydrocarbons in South African waters have been set. Lusher (1984) gives a target water quality guideline for Polycyclic Aromatic Hydrocarbons (PAHs) in South African coastal waters that should not exceed $0.3 \mu\text{g.l}^{-1}$. The widespread occurrence in the marine environment results largely from formation and release during the incomplete combustion of coal, oil, petrol, and wood, but they are also components of petroleum and its products (Irwin *et al.*, 1997).

BTEX refers to the group of compounds: benzene, toluene, ethylbenzene and total xylenes, which are naturally occurring compounds of petroleum that end up largely in petrol and aviation fuel as a result of the refining process. Sources of BTEX contamination include leakage from storage tanks (bulk facilities), surface spills and pipeline leaks. The BTEX compound represents some of the most hazardous components of petroleum and is more of a risk to humans than fish and wildlife. Short term hazards of lighter, more volatile and water soluble aromatic compounds (e.g. benzenes, toluene and xylenes) include potential acute toxicity to aquatic life in the water column (especially in relatively confined areas) as well as potential inhalation hazards (Irwin *et al.*, 1997). Potential chronic hazards of benzene, toluene and xylene include changes in the liver and harmful effects on the kidneys, heart, lungs and nervous system (Irwin *et al.*, 1997). The harbour sediments are generally anoxic, thereby creating an environment suitable for the accumulation of the BTEX compounds in the sediments (Bornman, 2003).

No national target water quality guidelines exist for BTEX concentrations in coastal waters, therefore results are compared with international guidelines (California, Australia and New Zealand, and UK guidelines) (Source: Bornman, 2003):

- ✿ California regional water control board (2000 and 2001)
 - Recreational use: 0.005 mg.l⁻¹
 - Aquatic environment: 0.005 mg.l⁻¹

- ✿ Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)
 - Recreational use: 0.001 mg.l⁻¹
 - Aquatic environment: 0.5mg.l⁻¹

- ✿ Water quality guidelines and standards in the marine environment, United Kingdom
 - Recreation use: n/a
 - Aquatic environment: 0.3mg.l⁻¹

Table 1 highlights water quality values measured on four occasions between November 2002 and October 2003. Stations where detectable levels of BTEX and/or PAHs were recorded are listed and compared with international and national target values respectively. Values highlighted in red indicate those that exceed either national or at least one of the international guidelines where applicable.

Table 1: A summary of BTEX and PAH levels recorded at various sampling stations during 4 surveys between November 2002 and October 2003.

	Station	Nov 2002	March 2003	July 2003	October 2003
BTEX (benzene, toluene, ethylbenzene and total xylenes)	A6	0.517 mg.l ⁻¹	~5.5 mg.l ⁻¹	~0.1 mg.l ⁻¹	
	A3		~0.9 mg.l ⁻¹		
	B1	0.008 mg.l ⁻¹	~2.1 mg.l ⁻¹		
PAH	A1		~0.125mg.l ⁻¹		0.06 mg.l ⁻¹
	B1	0.011 mg.l ⁻¹	~0.24 mg.l ⁻¹		
	A6	0.027 mg.l ⁻¹			
	A4		~0.9 mg.l ⁻¹		
	A5		~0.24 mg.l ⁻¹		

The following important aspects need to be highlighted from Table 1:

- ✿ Detectable limits recorded at stations A1, 3, 4, 5, and 6 and B1 are all in excess of national and at least one of the international water quality guidelines.
- ✿ Station A6 (33 ° 57'911"S 25 ° 38'442"E) is in the region of the Bulk Cargo Quay and Tanker Berth and is the only site that had detectable concentrations of BTEX during 3 of the 4 surveys, indicating that the source of the BTEX pollution must be in the vicinity of this station.
- ✿ Station B1 is a control site outside of the harbour. The high concentration of PAHs at this site during November 2002 and March 2003 indicates the possible flushing of these pollutants out of the harbour during spring low tide

- ✿ The March 2003 report suggested that the high levels of petroleum hydrocarbons in the water originated from groundwater pollution and entered the harbour and the adjacent surf zone from seeps.
- ✿ Concentrations of PAHs in the environment are highest in the sediments and lowest in the water column (Irwin *et al*, 1997). This means that concentrations of PAHs could be elevated in the harbour sediments (Bomman, 2003).
- ✿ The EEC (after UK) sets a target water quality guideline for total petroleum hydrocarbons at 0.3 mg.l^{-1} for safe recreational user of coastal water. Based on this, water in the harbour and at Kings Beach is likely to be unsafe for recreational use at certain times of the year.
- ✿ Australia sets a target water quality guideline for polycyclic aromatic hydrocarbons at $0.01 \text{ }\mu\text{g.l}^{-1}$ for safe recreational user of coastal water. Based on this, water in the harbour and at Kings Beach is likely to be unsafe for recreational use at certain times of the year.

An assessment of heavy metal pollution in East London and Port Elizabeth harbours was done by Fatoki and Mathabatha in 2001. :

The concentrations of certain heavy metals were measured in seawater and in sediments in the harbour. The results for the Port Elizabeth harbour are presented below and compared with DWAF water quality guidelines for coastal marine waters (Natural Environment and Recreational Use)(1995a and b) where available. Where South African guidelines are not available, values are compared with those from Australia and EEC (UK).

Table 2: Concentrations of heavy metals measured in seawater and sediments in the Port Elizabeth Harbour (Fatoki and Mathabatha, 2001)

Heavy metal	Concentration measured	DWAf Water quality guidelines (1995)	
		Natural Environment	Recreational Use
Seawater	mg.l⁻¹	µg.l⁻¹	
Cadmium	0.3 - 4	4	Australian guidelines: 0.005 mg.l ⁻¹
Copper	0.5 – 11.3	5	EEC guidelines: 0.5 mg.l ⁻¹
Iron	3.7 – 21.9		EEC guidelines: 3 mg.l ⁻¹
Lead	0.6 – 4.2	12	EEC guidelines: 0.5 mg.l ⁻¹ Australia guidelines: 0.05 mg.l ⁻¹
Manganese	0.7 – 16.8	No level specified	No level specified
Zinc	0.7 – 16.2	25	EEC guidelines: 0.5 mg.l ⁻¹
Sediment	mg.g⁻¹(dry weight)		
Cadmium	0.1 – 1.4		
Copper	8.6 – 82.3		
Iron	4219- 15182		
Lead	9 – 61.9		
Manganese	103 - 499		
Zinc	18.8 - 126		

The results above are indicative of heavy metal contamination in the Port Elizabeth Harbour, most likely as a result of storm water drains and streams which carry runoff from industrial, urban and residential sources. Ship repair activities are also suspected to be responsible for elevated concentrations in the upper reaches of the harbour (Fatoki and Mathabatha, 2001).

Although there are no water quality guidelines stipulated for manganese, the wastewater limit values set by DWAF for discharge of water into a water resource can be used as a guide as what should be considered non-harmful to the environment. For manganese, both the general and special limit standard is set at 0.1 mg.l^{-1} . The maximum value recorded in the Port Elizabeth harbour (**16.8 mg.l^{-1}**) is evidently far higher than this. According to the World Health Organisation, concentrations of dissolved manganese in natural waters that are essentially free of anthropogenic inputs can range from 10 to greater than 10 000 $\mu\text{g/litre}$. However, dissolved manganese concentrations in natural surface waters rarely exceed 1000 $\mu\text{g/litre}$ (**1 mg.l^{-1}**) and are usually less than 200 $\mu\text{g/litre}$ (**0.2 mg.l^{-1}**). Several studies have been done on the harmful effect of elevated manganese levels in marine waters, including impacts on diatoms, crabs, fish and amphibians at concentrations less than recorded in the Port Elizabeth harbour (Howe *et al.*, 2004).

Chapter

3

Chapter 3: Analysis of legal issues

Based on evidence presented in this report, it is likely that both facilities are in contravention of the following pieces of legislation:

- ✿ The Constitution
- ✿ National Environmental Management Act No 107 of 1998: Section 28
- ✿ NEMA: Air Quality Act No 39 of 2004: Section 21
- ✿ National Health Act No 61 of 2003
- ✿ National Water Act No 36 of 1998
- ✿ Marine Living Resources Act No 18 of 1998
- ✿ Environmental Conservation Act No 73 of 1989
- ✿ Nelson Mandela Bay Metropolitan Municipality Municipal Health By-Law
- ✿ Nelson Mandela Bay Municipality Waste Management By-Laws
- ✿ Waste Management Bill (2008)
- ✿ Integrated Coastal Management Bill (2007)

✿ Environmental Impact Assessment Regulations (2006).

Legal advice has been sought in respect of the issues raised above, and in the opinion of Rob Parker from Pagden's, there are two main issues in the matter, namely :-

- whether or not an environmental impact assessment is needed for the upgrade of the manganese ore facility; and
- the strategy and procedure to be adopted in respect of the pollution being caused by the manganese ore terminal and the tank farm.

With reference to the proposed upgrade in respect of the manganese ore terminal, the applicable regulations listing activities that may not commence without environmental authorisation from the competent authority and in respect of which an environmental impact assessment is required have been set out in Chapter 1. These have been confirmed by the legal opinion.

Legal advice also supports the proposal that the Department of Environment Affairs & Tourism (National) and the Department of Economic Affairs, Environment & Tourism (Provincial) must be contacted with a request that the current upgrade be halted until such time as an EIA is conducted and authorisation is obtained.

Should the departments be reluctant to act, then consideration should be given to bringing an application interdicting and preventing the upgrade until such time as the necessary environmental impact assessment has been done and authorisation obtained.

Naturally, such an application would have to be preceded by a letter of demand being sent to both Transnet and the departments.

With reference to the second issue, namely the strategy and procedure to be adopted in respect of the pollution being caused by the manganese ore terminal and the tank farm, legal advice is that there are probably insufficient facts and information at this point in time to conclusively state that pollution is occurring.

Consequently the exact nature and extent of the pollution needs to be determined. Although we have identified a number of potential statutory transgressions on the part of Transnet, a court will determine the matter with regard to facts and information that can be proved. The onus of proof is on the party that brings the application. At the risk of stating the obvious, a court case is only as strong as the facts upon which it is based.

With reference to the applicable statutory provisions, we have identified and discussed a number of relevant statutory provisions. The lawyers are of the view that the most relevant provision is section 28 of the National Environmental Management Act 107 of 1998, which obligates every person who causes, has caused or may cause significant pollution or degradation of the environment to take reasonable measures to prevent such pollution or degradation from occurring, continuing or re-occurring.

With reference to air pollution from the manganese ore terminal, section 5 of the Air Quality Act 39 of 2004 incorporates the provisions of the National Environmental Management Act.

In short, the lawyers recommend that any application that is to be brought be drafted and proceeded with in terms of section 28 of the National Environmental Management Act.

In summary, the lawyers recommend that :-

- The facts and information pertaining to pollution by the manganese ore terminal and tank farm need to be accurately determined and documented. A request to Transnet in terms of the Public Access to Information Act has been submitted, in order to obtain the information regarding current permits, plans and remediation activities. Certain additional investigation is required in order supplement the available data on environmental pollution. This will enable us to accurately determine and document the facts and information pertaining to pollution by the manganese ore terminal and tank farm.
- The Department of Environmental Affairs & Tourism (national) and the Department of Economic Affairs, Environment & Tourism (provincial) should be requested to direct measures to prevent the pollution from continuing and to prevent the current upgrade to the manganese terminal from continuing without an EIA, and to enforce such measures, as envisaged in terms of section 28 of NEMA.
- In the event of the department's failing to act, demand should be made on both Transnet and the departments listed above to ensure that measures are implemented to prevent the pollution, and that the current upgrade to the manganese terminal should cease until such time as a proper EIA has been done.
- In the event that the demands are not adhered to, consideration be given to bringing an application for an order directing and compelling both Transnet and the departments to implement the necessary remedial measures.

Chapter

4

Chapter 4: Proposal for Stakeholder Consultation

4.1 Introduction

The issues regarding the environmental impact of the manganese terminal and tank farm at the Port Elizabeth harbour are clearly of concern to a wide group of stakeholders, and as indicated above, a number of stakeholders have key roles to play in addressing or responding to these issues. This section outlines a stakeholder consultation plan under the following headings:

1. identification and prioritization of stakeholders
2. recommendations for the appropriate process and mechanisms for consultation with stakeholders
3. identification of the key issues for stakeholder consultation
4. provision of an estimation of costs

4.2 Stakeholder identification:

The stakeholders were drawn from the *Report on Issues Relating to the Potential Relocation of the Port Elizabeth Manganese Terminal and Tank Farm to the Port of Ngqura*, through the consultants' knowledge of the area, and through initial discussions which the consultants held with the following:

- Mike Cohen re environmental stakeholders

- Professor Richard Haines, Department of Development Studies, NMMU re academic advisors
- Megan Hope, Sardinia Conservancy, re relevant NGOs and conservancies

After reviewing existing reports and holding initial consultations with the above, the process of constructing a database of stakeholders was initiated. Stakeholders are divided into three broad categories:

A: Private sector

B: Government

C: Civil society

It should be noted that the database which is still under construction is an 'open database' allowing for the addition of stakeholders which come to light during the process of consultation.

A: Private sector

- PERCCI (client)
- Madiba Bay Development Agency (client)

Companies/parastatals with direct interest in harbours/ports in NMB:

- Coega Development Corporation/Coega IDZ/Port of Ngqura
- Southern Ports Development (60 year lease) – related to Humerail area
- Transnet /Transnet National Ports Authority /Transnet Freight Rail / Transnet Port Terminals/ Transnet pipelines - related to government sector

Mining and fuel companies/parastatals with interest in manganese and fuel tanks:

- Manganese companies: Assmang, Samancor; new players Renova, Kalahari
- Petrol companies: Shell, BP, Caltex
- Gas companies: Afrox and Easigas
- Aluminium companies (Alcan) ???
- Eskom (related to government sector)
- ACSA (Airports Company with interest in storage and transport of jet fuel)

Businesses in the harbour:

- Fishing industry: boat owners; unions representing fishermen; fish retailers
- Container/shipping companies (PLO Nedloyd etc)
- The Oyster Catcher restaurant; other potential tourist/entertainment providers

Business around the coast:

- Hotels and Hotel Association: Humewood Hotel, Protea Hotel, The Edward,
- Shop owners at Humewood
- Raggy Charters and Ocean Messengers
- Pro-Dive and Ocean Divers
- Hougham Park Aquaculture /Perlemoen Farm
- SeaArc located in the IDZ

Other business associations:

- East Cape African Chamber of Commerce

B: Government

i. National:

- Department of Public Enterprise
- Department of Minerals and Energy Affairs
- Department of Trade and Industry
- Department of Transport
- Department of Environmental Affairs and Tourism
 - Branch - Marine and Coastal Management (MCM)
 - Branch - Environmental Quality & Protection
 - Chief Directorate - Environmental Impact Assessment
- South African Maritime Safety Authority : Brian Collnutt
- South African Heritage Council

ii. Provincial:

- Department of Economic Development and Environmental Affairs
 - Albert Mfenyane – Chief Director
 - Div de Villiers – law enforcement

- Office of the Premier responsible for Provincial Growth and Development Programme (PGDP)
- Eastern Cape Development Corporation - ECDC
- East Cape Tourism Board

iii. Local:

- Nelson Mandela Bay Municipality (NMB IDP office; Economic Development and Tourism; Environmental Services)
- Mandela Bay Tourism
- Municipal Health Directorate: Dr Chabula
 - o Templeton Titmo – Air Pollution
 - o Etienne Horack - Health
- Small Business Development Corporation
- Ward Councillors –
 - o Wards 2,5 (Humewood/Central/North End: Dean Biddulph and Annette Lovemore);
 - o Wards 23, 54 – 59 (Motherwell) and
 - o Ward 53 (Coega/Motherwell rural).
- Motherwell Urban Renewal Programme officials
- Bayworld - Dr Malcolm Smale
- The South End Museum

C: Civil Society:

i. Specialist interest groups/affected parties:

- WESSA
- Heritage Agency
- Swartkops Trust
- Baakens Valley Trust
- South End Museum
- The Yacht Club
- Conservancies (Megan Hope to advise)
- Save our Coast – Peter Schwartz
- NSRI – Ian Grey

- NIMBLE – Greg Smith
- Bird Life Africa

ii. Organisations representing affected residents:

- Summerstrand Residents Association
- Central Residents Association (Terry Herbst)
- Humewood Residents Association
- Motherwell Ward councilors, ward committees, SANCO
- Political party branches in affected Wards (DA, ANC, UDM, COPE)

iii. Trade unions

- COSATU affiliates: SATAWU, NUM
- FEDUSA affiliates: PTUSA; UTATU (transport); SAPTU (parastatals)

iv. Professionals:

- GAPP architects
- Metroplan
- Environmental consultants: AfriCoast (Donald McGillivray); Werner Illenberger

v. Academic institutions:

- a) Nelson Mandela Metropolitan University:
 - o Professor Richard Haines (Department of Development Studies, Marine and Coastal Management)
 - o Professor Graham Kerley (Centre for African Conservation Ecology)
 - o Professor Steven Hosking (Department of Economics)
 - o Prof Ben Zeelie; Dr Gary Dugmore (Innoventon and The Downstream Chemicals Technology Station)
 - o Professor Ernest Van Dyk (Centre for Energy Research)
- b) University of Fort Hare (East London):
 - o Institute for Social and Economic Research (FHISER): Dr Leslie Bank

4.3 Prioritisation of stakeholders:

It is proposed that initial consultation and lobbying be conducted with the following key stakeholders:

- MBDA and PERCCI (clients)
- Provincial Department of Economic Development and Environmental Affairs
- Nelson Mandela Bay Municipality: Integrated Development Planning; Health Directorate; Law Enforcement; Economic Development and Tourism; Environmental Services.
- Directly affected civil society groups: workers, residents and businesses affected by manganese ore

4.4 Mechanisms and Process to Involve Stakeholders

We have mapped out a six stage process for Stakeholder consultation and engagement:

1. Identification and prioritization of stakeholders (Phase 1)
2. Consultation and lobbying with key stakeholders about key issues, need for stakeholder forum, obtaining 'buy in' to broad stakeholder forum (Phase 2)
3. Refine and assess stakeholder identification based on initial consultation
4. Establish a data base of stakeholders
5. Establishment of stakeholder forum
6. Management of stakeholder forum:
 - o Administrative: records and reporting administration
 - o Development of public momentum on the issue: establish website, letters to press, public meetings, newspaper advertisements, myPE website, banners, Facebook such as CleanAir PE Campaign.

4.5 Identification of Key Issues

Through a survey of existing reports and initial consultations, the key concerns to be addressed by the stakeholder consultation process are summarised as follows:

- environmental impact (human) (includes air pollution from ore dumps, potential leakage from tanks; existing and potential impact of retention of ore dumps and tank farm; potential impact of moving of ore dumps and tank farm to affected populations)
- environmental impact (other) (includes impact on entire coastal environment, including water quality, marine life (mammal, fish, shellfish, plant life and other)
- economic costs of moving (relocation, transport etc)
- economic costs of staying (capacity, upgrade, meeting environmental requirements)
- economic benefits of moving (tourism/harbour and inner-city development/integrated coastal development)
- implications for city planning/engineering (vision for city/integrated development planning/transport and energy requirements)
- implications for city management (legal responsibility for above outcomes, monitoring and enforcement)

Chapter

4

Chapter 5: Way Forward

It is clear that both the Manganese Ore Terminal and Storage Facility and Tank Farm are at present creating significant environmental harm and resultant human health impacts. Both operations are in breach of several pieces of national, provincial and municipal. However not all the necessary information is available in order to successfully pursue legal action, and certain additional information and investigation is required. It is therefore recommended that the project proceeds in two phases – a phase of information and data gathering, augmented by stakeholder consultation, followed by a phase of substantive legal action.

Firstly there is information that is in Transnet's possession that has not been made available, and which is a matter of public interest. The most appropriate route to obtain this information is in terms of the Promotion of Access to Information Act 2 of 2000. Lawyers acting on behalf of PERCCI have already submitted a request to Transnet in terms of this Act in order to obtain the following documents:

- Transnet's Atmospheric Emission Licence issued in terms of the Air Quality Act 39 of 2004.
- The Environmental Impact Assessment Report, as required in terms of regulations promulgated under Section 24(2)(a) and (d) of the National

Environmental Management Act 107 of 1998, for the proposed expansion of the manganese ore terminal.

- Transnet's original permit to operate the manganese ore terminal, storage facility and tank farm.
- Transnet's project proposal for the expansion and/or upgrade of the manganese ore terminal.
- Transnet's Pollution Safety Certificate issued in terms of Section 24 of the Marine Pollution (Control and Civil Liability) Act 6 of 1981.
- Transnet's Contingency Plan, approved by the Director General, Transport, for the combating of pollution, as required by Regulation 22 of the regulations promulgated in terms of the Marine Pollution (Control and Civil Liability) Act 6 of 1981.
- Transnet's Air Quality Control Tests conducted for the past ten years.
- Transnet's emergency plans in the event of an accident resulting in pollution.
- The report prepared by the Nelson Mandela Metropolitan Municipality during 2005 in respect of an alleged dust nuisance at the manganese ore bulk terminal.

Transnet has 30 days in which to respond to this request. In addition to this request, it is important that additional factual information is gathered to support future legal action, and it is recommended that the following actions be taken:

- It is important that a dust monitoring programme be instated to determine whether surrounding land users and employees are at risk of health effects posed

by dust from the manganese ore facility. This should include determining what metals occur in the dust as well as concentrations thereof. These must be compared with maximum exposure levels specified by the World Health Organisation. The average number of days a year that persons at risk are exposed to manganese ore dust must be calculated based on wind speed and direction, and distance between the pollution source and the receptor.

- ✿ The levels of manganese in groundwater under the manganese ore facility must be monitored.
- ✿ Manganese levels in sediment in the nearshore and supratidal environment at Kings Beach must be measured as well as in the harbour to determine the impact it is having on the marine environment.
- ✿ An investigation must be done to determine whether operations at the Tank Farm are in line with COMAH Regulations.

Consultation is required with the Nelson Mandela Bay Metropolitan Municipality to determine to what extent they are able to undertake these tests themselves, and in which instances external support is required for test purposes.

In parallel with the above investigations, some additional investigation is required in regard to the following matters:

- ✿ It must be determined whether the manganese ore facility has a valid Air Emission Licence. Consultations with the national Department of Environmental Affairs and Tourism has already been initiated in this regard.
- ✿ There is sufficient data to prove that Tank Farm is causing environmental harm at present, therefore focus should be made in determining whether this site should be declared an ‘investigation area’ in terms of the Waste Management Act (2009). Remedial action will follow from this.

In parallel with the above, steps it is recommended that the stakeholder consultation process is initiated, to solicit broader involvement in the process. The most important consultative actions are the following:

- ✿ The Department of Economic Development and Environmental Affairs must be consulted to determine whether the current upgrading of the manganese ore facility is legal in terms of the NEMA and EIA Regulations (2006).
- ✿ The Nelson Mandela Bay Metropolitan Municipality must be consulted to solicit their support for the above investigations, and to engage them in the process of collecting and analysing samples.

The table below summarises actions that should be taken to fill gaps in knowledge that are needed to pursue legal action against Transnet by the NMBM. Persons and/or organizations responsible for providing information to fill the gaps are indicated, as are potential sources of this information.

	Action	Source
	<u>Manganese Ore Facility</u>	
1	Request for information:	Transnet
	Copy of certificate to operate, including restrictive conditions and mitigation measures	Transnet
	Air Emission License	Transnet
	Operational Management Plans to ensure compliance with minimum air emission standards	Transnet
	Results of any environmental pollution monitoring that has been done in the past	Transnet
	Compliance with municipal by-laws with regards to air pollution, waste management, and environmental health matters	Transnet
2	Approach DEAT and DEDEA to determine legitimacy of current upgrade	Transnet
3	Motivate for air pollution monitoring programme at facility and in area of 'population at risk'	Stations to be set up at the Facility and at various points downwind from there

	Action	Source
	<u>Manganese Ore Facility</u>	
4	Measure manganese and other heavy metal concentrations in groundwater beneath the Ore Facility and at points down gradient thereof.	Samples to be taken in groundwater beneath the Facility and at various points down gradient from there
5	Measure manganese and other heavy metal concentrations in the coastal environment at Kings Beach. Longitudinal transects should be run from the dune area in front of the manganese ore facility into the surf-zone, where samples are collected in sediment and the water column respectively. A reference site must be chosen for comparative purposes.	Kings Beach. Happy Valley Beach could possibly be used as a reference site.

	Action	Source
	<u>Tank Farm</u>	
1	1.Request for Information	NPA
	Operational Management Plan to ensure compliance with COMAH Regulations and other relevant environmental and health and safety regulations	National Ports Authority
	Information on the viability of the Tank Farm in terms of safety considerations and potential for contamination (i.e. age of tanks, nature of surface on which they are situated, containment mechanisms etc).	National Ports Authority
	Emergency plan in case of fire	National Ports Authority
	Records of any minor and major spills and remedial action that was taken	National Ports Authority
	Compliance with municipal by-laws with regards to air pollution, waste management, and environmental health matters	National Ports Authority
2	Measure hydrocarbon levels in the coastal environment at Kings Beach in sediment and the water column. A reference site must be chosen for comparative purposes.	Kings Beach. Happy Valley Beach could possibly serve as a reference site.

Based on the above request for information in terms of PAIA, the engagement with priority stakeholders, and the measurement of levels of pollution and environmental degradation, it will be possible to finalise the legal case to be pursued against Transnet. This will constitute a third and final phase to the project.

Chapter
5

Chapter 6: References

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