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<th>Project:</th>
<th>ENVIRONMENTAL MANAGEMENT PLAN FOR THE OPERATIONS OF THE COMMERCIAL HARBOUR: PORT OF WALVIS BAY</th>
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| Prepared for: | The Namibian Ports Authority  
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Report Approval

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Conservation Ecologist

External Reviewer

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André van Tonder  
PhD, Fr Eng  
Director: Maritime  
WSP, Transport and Infrastructure, Africa

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[Signature]
WALVIS BAY on the 25 day of November 2019.

1 acting as the Proponent’s representative (Namport), hereby confirm that the project description contained in this report is a true reflection of the information which the Proponent has provided to Geo Pollution Technologies. All material information in the possession of the proponent that reasonably has or may have the potential of influencing any decision or the objectivity of this assessment is fairly represented in this report.
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1 INTRODUCTION

The Namibian Ports Authority Act, Act Number 2 of 1994, as proclaimed in Government Gazette No. 810, made provision for “the establishment of the Namibian Ports Authority to undertake the management and control of ports and lighthouses in Namibia and the provision of facilities and services related thereto; and to provide for matters incidental thereto.” Under this act, Namport, a state owned enterprise, was established as the port authority and under their control is the Port of Walvis Bay on the central coast and the Port of Lüderitz on the southern coast of Namibia.

Namport’s key roles are to (www.namport.com.na):

- Manage the port facilities to cater for current trade needs.
- Develop the ports for future demands.
- Contribute to the competitiveness of the SADC region’s trade through the efficient, reliable and cost-effective supply of port services.
- Facilitate economic growth in Namibia by enabling regional development and cross-border trade.
- Promote the Ports of Walvis Bay and Lüderitz as preferred routes for sea-borne trade between SADC, Europe and the Americas.
- As the founding architects of the Walvis Bay Corridor Group, assist with developing cross-border trade.
- Minimize the impact of port operations on the natural environment by applying International Organisation for Standardisation (ISO) 14001.
- Uplift and support the communities in which Namport operates.

In order to comply with Namibian legislation, and to adhere to all codes and standards applied in their operations, Namport wishes to develop an Environmental Management Plan (EMP) for their operations in the Port of Walvis Bay (Figure 1). Situated on the central coast in the Erongo Region, the Port of Walvis Bay is the key port for imports and exports for Namibia. It also plays an important role in servicing land locked countries in southern Africa. The Port of Walvis Bay is central in Namibia’s vision of becoming a logistics hub in southern Africa.

Geo Pollution Technologies (Pty) Ltd was appointed by Namport to develop the EMP. The EMP provides management options to ensure environmental impacts of the port are minimised. The environment being defined in the Environmental Assessment Policy and Environmental Management Act as “land, water and air; all organic and inorganic matter and living organisms as well as biological diversity; the interacting natural systems that include components referred to in sub-paragraphs, the human environment insofar as it represents archaeological, aesthetic, cultural, historic, economic, paleontological or social values”.

The EMP is thus a tool used to take pro-active action by addressing potential problems before they occur. This limits potential future corrective measures that may need to be implemented and allows for application of mitigation measures for unavoidable impacts.

The EMP will be used to apply for an environmental clearance certificate in compliance with Namibia’s Environmental Management Act (Act No 7 of 2007).
2 SCOPE
The scope of the EMP is to:

- Provide a brief overview of all components, and their operations, related to the Port of Walvis Bay, inclusive of both Namport and tenants.
- Summarise the legal and regulatory framework within which the Port of Walvis Bay operates.
- Provide a brief overview of the environment, i.e. the physical, biological, social and economic conditions, potentially impacted by the port.
- To identify and assess potential impacts of the port on the environment.
- Identify a range of management actions which could mitigate the potential adverse impacts to acceptable levels.
- To provide sufficient information to the relevant competent authorities and the Ministry of Environment and Tourism to make informed decisions regarding the development.
3 METHODOLOGY

The following methods were used to prepare the EMP:

- Baseline information was obtained from existing secondary information and from a site visit.
- The inputs, comments and questions of key identified stakeholders and other interested and affected parties (I&APs) were gathered at public stakeholders meetings and through other forms of correspondence.
- Based on all information, infrastructure and operational procedures were briefly explained and an environmental description was prepared. Potential environmental impacts were identified and preventative and mitigating methods proposed.

4 THE PORT OF WALVIS BAY

The Port of Walvis Bay is under jurisdiction of Namport, who acts as landlord and port operator, with a number of tenants operating in the port. It is the principal commercial port in Namibia. During the period April 2017 to March 2018 a total of 1,070 vessels called at the port (Namport Annual Report 2017/2018). Approximately 5,000,000 freight tonnes of cargo are handled in the Port of Walvis Bay per annum. The following subsections, categorised by activity, provide brief descriptions of the current activities and facilities in the port. See Figure 2 for the port layout and location of tenants within port.

4.1 CONTAINERISED, BULK AND BREAK-BULK IMPORTS AND EXPORTS

Sea ports are typically the main avenue for containerised, bulk and break-bulk imports and exports for a country. The main types of bulk, break-bulk and containerised cargo moving through the Port of Walvis Bay are fish and fish products, salt, sugar, coal, manganese, copper, zinc and lead ore and/or concentrates, uranium as yellow cake, fluorspar, marble and granite, sodium carbonate, sulphuric acid and various other chemicals and products in smaller volumes. Of these, salt is the main commodity exported and constituted 42.7% of the freight tonnes shipped from the port during 2017/2018. Loading and offloading of vessels takes place at berths one to eight. Berth one to three with a depth of -14 mCD and four to eight -10.6 mCD.

Loading and offloading of dry bulk cargo are typically performed in two ways: 1) by means of an auger conveyor (screw conveyor) or 2) by means of a grabs. During offloading product is emptied into trucks, hoppers or onto conveyors. Hoppers are used to fill bulk bags and containers, or are emptied directly into trucks for transport. Conveyors transport products to dedicated storage areas from where trucks, bulk bags or containers can be filled for further transport.

Break-bulk cargo is typically handled and transported as bulk bags, crates or drums and is loaded and offloaded by means of cranes. Offloading can be directly to trucks for immediate transport out of the port or to temporary storage areas within the port. Temporary storage areas include various dry ports (see Section 4.5.3), warehouses and rub halls. From these facilities the break-bulk cargo can be loaded and transported to clients in its current break-bulk form, or it can be re-packed into smaller volumes, as per client requirements.

Containerised cargo is temporarily stored, loaded to, and offloaded from, container vessels at the recently commissioned, dedicated container terminal (water depth -14 mCD). The container terminal has capacity to store and handle 750,000 TEU’s (twenty foot-equivalent unit) per annum. Containers are also stored and handled at the different dry ports (refer Section 4.5.3). These include reefers for cold storage and associated transport purposes.

Hazardous substances such as caustic soda, sulfuric acid and explosive materials that are imported in bulk through the Port of Walvis Bay are mainly destined for the mining industries in Namibia and neighbouring SADC countries. Namport has various procedures in place for the safe handling and storage of these products. These include dedicated temporary storage areas, specific routes through the port and town and the necessary permits and permissions from various authorities.

Transport of bulk, break-bulk and containerised cargo to and from the port is by means of trucks or trains. Trucks and trains include flatbed, side tipper and tanker trucks / rail cars.
Figure 2. Port layout and tenants
4.2 FUEL IMPORTS
In terms of freight tonnes of cargo imported, fuel (diesel, unleaded petrol, Jet-A1 and heavy fuel oil) by far exceeds any other commodity. During 2017/2018 a total of 1,176,839 freight tonnes of fuel products were imported. This accounts for 38.4% of the freight tonnes landed in the port for this period. Fuel is currently offloaded at the “old” tanker jetty at the north-eastern corner of the commercial harbour. The jetty can accommodate one tanker ship at a time and fuel is pumped via underground pipelines to the various bulk fuel storage facilities in Walvis Bay. Two heavy fuel oil storage tanks are situated within the commercial harbour (see Figure 2 – Oil Farm).

The newly constructed fuel terminal north of Walvis Bay consists of a 1,600 m long concrete jetty with two dolphin berths. To service the fuel terminal, new pipelines to the bulk fuel storage facilities in the industrial area of Walvis Bay were constructed. The operations of the newly constructed fuel terminal and the bulk fuel storage facilities are subject to their own environmental clearance certificates and fall outside the scope of this EIA.

The fuel terminal currently has its own dedicated entrance channel. Should the proposed Port of Walvis Bay SADC Gateway realise, the entrance channel will also serve this port facility. Furthermore, the fuel terminal has adequate firefighting equipment, emergency fuel spill containment materials and protocols, and support infrastructure.

4.3 VEHICLE IMPORTS
Vehicle imports are an important component of the services provided by the Port of Walvis Bay. Vehicles are typically shipped in roll-on/roll-off (Ro-Ro) vessels. Ro-ro’s allow for vehicles to be driven onto, and off from, the vessels under their own power or onto other self-propelled platforms.

4.4 PASSENGER TRAFFIC
The growth in the tourism industry has seen an increase in the number of cruise liners calling at the Port of Walvis Bay. With the construction of the new container terminal, a dedicated cruise-vessel berth was constructed. The berth can accommodate vessels up to 300 m in length, with a draft of -11 meters to chart datum. In addition to increasing the port’s passenger traffic handling ability, it also allows Namport to move passenger traffic away from berths one to eight and thus away from the central hub of port activity.

4.5 SUPPORT AND LOGISTICS SERVICES
In addition to the import and export of goods and raw materials, a number of support services are also provided by Namport and its tenants. The following section provides an overview of the most important of these services.

4.5.1 Ship Repair and Maintenance
Ship repair and maintenance is performed at three locations. Major repairs and maintenance are performed at the Syncrolift and the floating dry docks, while minor repairs and maintenance can be performed alongside quays and jetties.

Namport manages the Syncrolift and operates the dry docks in partnership with Elgin, Brown & Hamer (EBH) Namibia. The Syncrolift can lift vessels of up to 2,000 tonnes from the water. A lifted vessels is moved to one of five land-based bays where repairs and maintenance are conducted. There are three Panamax floating dry docks with a combined lifting capacity of 29,500 tonnes. Namdock I can lift vessels of 8,000 tonnes, Namdock II 6,500 tonnes and Namdock III 15,000 tonnes.

Repair and maintenance activities at the Syncrolift and floating dry docks may include hull cleaning, grit blasting, spray painting and mechanical and electrical repairs. A number of private industries in Walvis Bay offer services to the repair and maintenance facilities.
Among these services are engineering and machine works, ship integrity inspections, equipment and consumable supplies as well as domestic and hazardous waste removal and disposal.

Jetty and quay-side maintenance and repairs are conducted where no need for dry docking or land-based repair is needed. It is limited to minor structural, electrical and mechanical repairs. These types of repairs are typically associated with the fishing industry which falls outside of the commercial harbour onshore, but offshore (jetties) within port limits.

4.5.2 Transhipments
The Port of Walvis Bay acts as an intermediate destination for transhipments. This can be in the form of sea cargo temporarily stored in the port before being re-loaded onto another vessel for further transport, or shipments via for example dry ports (see section 4.5.3). Transhipments comprised of 332,899 freight tonnes during the period 2017/2018.

4.5.3 Dry Ports and Storage Facilities
The Port of Walvis Bay hosts dry ports for SADC countries. Dry ports are inland terminals directly connected to a seaport by rail or road. It acts as a hub for transhipments of sea cargo to and from inland destinations. At the Port of Walvis Bay dry ports serve the neighbouring land-locked countries Zambia, Zimbabwe and Botswana. Cargo stored and handled at the dry ports can include anything from mineral ores, chemicals, vehicles and general goods mainly in break-bulk and containerised form.

Various privately operated storage facilities are present within the commercial harbour. These range from bulk storage of mineral ores in the open to storage of goods in warehouses and rub halls. Many of these are operated under their own EIAs and EMPs which will have to be in accordance with Namport’s EMP and operating procedures.

4.5.4 Fuel Bunkering
Namport as well as its tenants need to refuel vessels docked, anchored or underway within the port. For this purpose various smaller bulk fuel installations are present at different locations within the port. Fuel bunkering methods include: 1) underground pipelines from bulk tanks to the quay areas and concrete jetties, where hose trolleys are used for bunkering purposes; 2) by road tankers where bunker points are not available; or 3) by offshore tanker vessels where vessels cannot be fuelled from land. Permission for the latter ship-to-ship transfer method of fuel supply is obtained from the Directorate of Maritime Affairs (DMA), Ministry of Works and Transport. Within port limits, the pollution combating officer of Namport monitors and oversees ship-to-ship transfers.

4.5.5 Cold Storage Facilities
A commercial cold storage facility is present within the commercial harbour and is operated by a private company. The facility provides temporary cold storage space (refrigeration and freezing) for the import and export of perishable goods (e.g. fruit, vegetables, meat and fish) via the port.

4.5.6 Small Craft Harbour, Yacht Club and Waterfront
A small craft harbour is situated in the port and serves to provide a launch site for small motorised craft. This serves among others the tourism and mariculture industries. The yacht club and waterfront further contribute to nautical recreation and maritime tourism activities. Numerous private sightseeing cruises operate from the waterfront area.

4.5.7 Dredging
Sedimentation and seabed scouring decreases water depth in the entrance channels and alongside jetties and quays. Maintenance dredging is therefore occasionally required to
deeper these areas to allow for the safe navigation of vessels. Capital dredging is performed when new channels, turning areas or berthing space are required or existing ones are deepened. Dredging is covered by its own EIA and EMP and is performed under its own environmental clearance certificate (Botha et al. 2013).

4.5.8 Fishing Operations and Mariculture
Fishing and fish processing is a very important industry in Walvis Bay and Namibia as a whole. The land-based infrastructure of the fishing industry is outside of the commercial harbour and is located in the industrial area of Walvis Bay. Offshore infrastructure like jetties and all related offshore activities within port limits performed by fishing companies are under Namport’s jurisdiction. This includes any jetty construction and modification, dredging, docked ships’ repair and maintenance activities, anchoring and navigation.

Mariculture of oysters and mussels occur within port limits. It is a growing industry regarded as an important industry by the various Namibian development plans. Mariculture activities also fall outside the scope of Namport’s EMP.

Although the fisheries and mariculture activities are not included in the EMP, operations of the commercial harbour may impact on the fishing and mariculture industry and vice versa. This will mostly be related to deterioration of seawater quality as a result of activities of the respective parties. For example, ship repair activities, dredging and accidental spills may decrease the quality of the seawater abstracted for fish processing, while effluent discharge from fish factories can in turn increase the biological and chemical oxygen demand of water in the harbour. Water which is essentially Namport’s responsibility to protect.

4.6 TRAFFIC
Vehicle traffic into and out of the port is regulated at security controlled gates. Access is permit controlled and regular alcohol testing is conducted. The main access gate is off 3rd Street East and limited off-street parking space for light vehicles is provided outside the access gate. A truck staging area is located near the gate in 4th Street East.

In the past, the Port of Walvis Bay was serviced by three gates (Figure 3). Container traffic was handled through the container gate, situated in Rikumbi Kandanga Road. General traffic, bulk and break bulk cargo, after hour container traffic and container traffic to private container depots inside the port were handled through the main gate. The third gate, situated at the northern end of 5th Road (South Gate), was used for abnormal loads which include the trucks transporting salt and explosives as well as construction vehicles as for example during the construction of the new container terminal.

With the commissioning of the new container terminal, and to manage the current and expected increase in traffic, Namport proposed the design and construction of a new gate complex. The design includes the following main components: 1) the closure of the existing container gate; 2) the conversion of the existing main gate into an exit gate only; 3) construction of a multi-lane entrance gate; and 4) construction of a truck staging/queuing area (Figure 4). See Faul A, Botha P. 2017. Environmental Management Plan for the Design and Construction of the New Main Gate Complex and Truck Staging Area in the Port of Walvis Bay for more details.

Dangerous cargo which may have the added danger of being explosive is carefully managed in terms of transport. Various predetermined transport routes and management methods are implemented for dangerous cargo. Transport routes through the town can be seen in Figure 16.

The railways and sidings in the Port are actively used, mainly for the transport of cargo to the mining sector within Namibia.

4.7 SECURITY
The entire landside of the port area is fenced off and security personnel man all entrance gates. No unauthorised access is allowed in the port area and all visitors must obtain an entrance permit from Namport security. Access to all dry port storage and handling areas are via port security
and the internal roads, except the administrative building of the Botswana Dry Port which can be accessed directly from the street.

### 4.8 ADDITIONAL INFRASTRUCTURE
Apart from the infrastructure and operations within the commercial harbour, Namport has some additional infrastructure outside of the commercial harbour area. This include the yacht club and fishing club off Atlantic Street, the waterfront area, as well as various properties throughout Walvis Bay. Namport also owns the properties that host the Pelican Point and Swakopmund lighthouses together with their buildings and related infrastructure. Both the lighthouses are important tourism attractions (see Appendix A for Namport properties).

![Figure 3. Current port gates](image-url)
Figure 4. New gate complex

5 ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS

Namport operates within a regulatory and legal framework which can be described as being related to the protection, management and utilization of the environment and natural resources for sustainable development and/or intergenerational equity as well as to the protection of human rights. The following is a brief summary of the most important regulatory and legal aspects binding on the Port of Walvis Bay.
<table>
<thead>
<tr>
<th>Law</th>
<th>Key Aspects</th>
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| **The Namibian Constitution** | ✦ Promote the welfare of people  
✦ Incorporates a high level of environmental protection  
✦ Incorporates international agreements as part of Namibian law |
| **Environmental Management Act**  
Act No. 7 of 2007 | ✦ Defines the environment  
✦ Promote sustainable management of the environment and the use of natural resources  
✦ Provide a process of assessment and control of activities with possible significant effects on the environment |
| **Environmental Management Act Regulations**  
Government Notice No. 28-30 of 2012 | ✦ Commencement of the Environmental Management Act  
✦ List activities that requires an Environmental Clearance Certificate  
✦ Provide Environmental Impact Assessment Regulations |
| **Namibia Ports Authority Act**  
Act No. 2 of 1994 | ✦ Provides for the establishment of the Namibian Ports Authority to undertake the management and control of ports  
✦ Outline the functions of the Namibian Ports Authority among which is the protection of the environment |
| **Territorial Sea and Exclusive Economic Zone of Namibia Act**  
Act No. 3 of 1990 | ✦ Determine and define the territorial sea, internal waters, contiguous zone, exclusive economic zone and continental shelf of Namibia |
| **Marine Resources Act**  
Act No. 27 of 2000 | ✦ Provide for the conservation of the marine ecosystem and the responsible administration, conservation, protection and promotion of marine resources on a sustainable basis  
✦ Under this act the following were determined:  
  o Regulations relating to the exploitation of marine resources (2001)  
  o Declaration of the Namibian Islands' Marine Protected Area: Marine Resources Act (2009)  
  o Regulations relating to Namibian Islands’ Marine Protected Area: Marine Resources Act, 2000 (2012) |
| **Marine Notice No. 02 of 2017**  
Ministry of Works and Transport | ✦ Sets forth the conditions and requirements under which the Minister of Works and Transport may grant permission for the transfer of oil within the prohibited area of the Namibian waters. |
| **Marine Notice No. 04 of 2018**  
Ministry of Works and Transport | ✦ Provides guidance on shipboard garbage management requirements in Namibia, in terms of the International Convention for the Prevention of Pollution from Ships (MARPOL) |
| **Dumping At Sea Control Act**  
Act No. 73 of 1980 | ✦ Provide for the control of dumping of substances in the sea  
✦ Provides for permits to be issued to allow dumping at sea of scheduled substances |
| **Petroleum Products and Energy Act**  
Act No. 13 of 1990, Government Notice No. 45 of 1990 | ✦ Regulates petroleum industry  
✦ Makes provision for impact assessment  
✦ Petroleum Products Regulations (Government Notice No. 155 of 2000)  
✦ Prescribes South African National Standards (SANS) or equivalents for construction, operation and decommissioning of petroleum facilities (refer to Government Notice No. 21 of 2002) |
<table>
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<tr>
<th>Law</th>
<th>Key Aspects</th>
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<tr>
<td><strong>Prevention and Combating of Pollution of the Sea by Oil Act, 1981 (Act No. 6 of 1981)</strong></td>
<td>Provides for the prevention of pollution of the sea where oil is being or is likely to be discharged</td>
</tr>
<tr>
<td><strong>Prevention and Combating of Pollution of the Sea by Oil Amendment Act (No. 24 of 1991)</strong></td>
<td>Amends the Prevention and Combating of Pollution of the Sea by Oil Act of 1981 to be more relevant to Namibia after independence</td>
</tr>
<tr>
<td><strong>Aquaculture Act (2002)</strong></td>
<td>Provides for water quality monitoring to protect aquaculture activities</td>
</tr>
<tr>
<td><strong>Marine Traffic Act</strong></td>
<td>Regulate marine traffic in Namibia</td>
</tr>
<tr>
<td><strong>The Water Act</strong></td>
<td>Remains in force until the new Water Resources Management Act comes into force&lt;br&gt;Defines the interests of the state in protecting water resources&lt;br&gt;Controls the disposal of effluent&lt;br&gt;Numerous amendments</td>
</tr>
<tr>
<td><strong>Water Resources Management Act</strong></td>
<td>Provide for management, protection, development, use and conservation of water resources&lt;br&gt;Prevention of water pollution and assignment of liability&lt;br&gt;Not in force yet</td>
</tr>
<tr>
<td><strong>Atomic Energy and Radiation Protection Act</strong></td>
<td>Provide for adequate protection of the environment and of people in current and future generations against the harmful effects of radiation by controlling and regulating the production, processing, handling, use, holding, storage, transport and disposal of radiation sources and radioactive materials.&lt;br&gt;Provides for authorisation, licences and registrations with regard to import into or export from Namibia any radiation source or nuclear material or transport any radiation source or nuclear material&lt;br&gt;Provides for regulations (Government Notice No. 221 of 2011) with regard to radiation protection and waste disposal.</td>
</tr>
<tr>
<td><strong>Explosives Act</strong></td>
<td>Regulates the manufacture, storage, sale, transport, import, export, use and possession of explosives.&lt;br&gt;Numerous Amendments.</td>
</tr>
<tr>
<td><strong>Road Traffic and Transport Act</strong></td>
<td>Provides for the control of traffic on public roads and the regulations pertaining to road transport</td>
</tr>
<tr>
<td><strong>Road Traffic and Transport Regulations</strong></td>
<td>Prohibits the transport of goods which are not safely contained within the body of the vehicle; or securely fastened to that vehicle, and which are not properly protected from being dislodged or spilled from that vehicle.</td>
</tr>
<tr>
<td><strong>National Heritage Act of Namibia</strong></td>
<td>Provides for the protection and conservation of places and objects of heritage significance and the registration of such places and objects&lt;br&gt;Defines as protected any remains of human habitation or occupation that are 50 or more years old found on or beneath the surface on land.&lt;br&gt;Provides for reporting of heritage finds, issuing of permits, and archaeological impact assessments.</td>
</tr>
<tr>
<td><strong>The National Monuments Act of Namibia</strong></td>
<td>No person shall destroy, damage, excavate, alter, remove from its original site or export from Namibia: a) any meteorite or fossil; or</td>
</tr>
<tr>
<td>Law</td>
<td>Key Aspects</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Local Authorities Act</td>
<td>† Define the powers, duties and functions of local authority councils</td>
</tr>
<tr>
<td>Act No. 23 of 1992</td>
<td></td>
</tr>
<tr>
<td>Regional Councils Act</td>
<td>† Sets out the powers, duties, functions, rights and obligations of Regional Councils.</td>
</tr>
<tr>
<td>Act No. 22 of 1992</td>
<td>† Provides the legal basis for the drawing up of Regional Development Plans.</td>
</tr>
<tr>
<td>Public Health Act</td>
<td>† Provides for the protection of health of all people</td>
</tr>
<tr>
<td>Act No. 36 of 1919</td>
<td></td>
</tr>
<tr>
<td>Public and Environmental Health Act</td>
<td>† Provides a framework for a structured more uniform public and environmental health system, and for incidental matters</td>
</tr>
<tr>
<td>Act No. 1 of 2015</td>
<td>† The objects of this Act are to -</td>
</tr>
<tr>
<td></td>
<td>‡ promote public health and wellbeing;</td>
</tr>
<tr>
<td></td>
<td>‡ prevent injuries, diseases and disabilities;</td>
</tr>
<tr>
<td></td>
<td>‡ protect individuals and communities from public health risks;</td>
</tr>
<tr>
<td></td>
<td>‡ encourage community participation in order to create a healthy environment; and</td>
</tr>
<tr>
<td></td>
<td>‡ provides for early detection of diseases and public health risks.</td>
</tr>
<tr>
<td></td>
<td>† Not in force yet</td>
</tr>
<tr>
<td>Labour Act</td>
<td>† Provides for Labour Law and the protection and safety of employees</td>
</tr>
<tr>
<td>Act No 11 of 2007</td>
<td>† Labour Act, 1992: Regulations relating to the health and safety of employees at work (Government Notice No. 156 of 1997)</td>
</tr>
<tr>
<td></td>
<td>† Provides for the availability of chemical safety data sheets (material safety data sheets or MSDS) to be available for all hazardous or dangerous goods</td>
</tr>
<tr>
<td></td>
<td>† Makes provision for regulations on the transport of hazardous substances (regulations not in force yet)</td>
</tr>
<tr>
<td>Atmospheric Pollution Prevention</td>
<td>† Governs the control of noxious or offensive gases</td>
</tr>
<tr>
<td>Ordinance</td>
<td>† Prohibits scheduled process without a registration certificate in a controlled area</td>
</tr>
<tr>
<td>Ordinance No. 11 of 1976</td>
<td>† Requires best practical means for preventing or reducing the escape into the atmosphere of noxious or offensive gases produced by the scheduled process</td>
</tr>
<tr>
<td>Hazardous Substances Ordinance</td>
<td>† Applies to the manufacture, sale, use, disposal and dumping of hazardous substances as well as their import and export</td>
</tr>
<tr>
<td>Ordinance No. 14 of 1974</td>
<td>† Aims to prevent hazardous substances from causing injury, ill-health or the death of human beings</td>
</tr>
<tr>
<td>Law</td>
<td>Key Aspects</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Pollution Control and Waste Management Bill (draft document)       | ♦ Not in force yet  
♦ Provides for prevention and control of pollution and waste  
♦ Provides for procedures to be followed for licence applications |
| Integrated Coastal Zone Management Bill (2014)                      | ♦ Aims at coastal management and give effect to Namibia’s obligations in terms of international law regulating coastal management  
♦ Not adopted yet                                                                 |
| Draft Wetland Policy of 2003                                        | ♦ Considering the Walvis Bay Lagoon, the Wetland Policy of 2003 is of importance and includes:  
♦ Protection and conservation of wetlands and ecosystems. |
| National Marine Pollution Contingency Plan of 2017                  | ♦ Coordinated and integrated national system for dealing with oil and other spills in Namibian waters.                                      |
| The National Environmental Health Policy                            | ♦ Promotes and facilitates in improving the working and living environment of Namibians  
♦ Regulates the availability of environmental health services at various levels. |
| Namport Safety, Health, Environment and Quality Policy              | ♦ Provides guidance to all members responsible for managing Safety, Health, Environment and Quality related aspects.  
♦ Ensures compliance with all applicable legal SHEQ and related requirements. |

**Table 2. Relevant multilateral environmental agreements for Namibia and the project**

<table>
<thead>
<tr>
<th>Agreement</th>
<th>Key Aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benguela Current Convention of 2013</td>
<td>♦ The Convention is a formal treaty between the governments of Angola, Namibia and South Africa that sets out the countries’ intention &quot;to promote a coordinated regional approach to the long-term conservation, protection, rehabilitation, enhancement and sustainable use of the Benguela Current Large Marine Ecosystem, to provide economic, environmental and social benefits.&quot;</td>
</tr>
</tbody>
</table>
| Convention on Biological Diversity (CBD)                                | ♦ Primary goal is the conservation of biodiversity  
♦ Prescribes the precautionary principle  
♦ Parties to the convention are obliged to:  
♦ Establish a network of protected areas;  
♦ Create buffer areas adjacent to these protected areas using environmentally sound and sustainable development practices; and  
♦ Rehabilitate degraded habitats and populations of species. |
| The Convention on Wetlands of International Importance especially as Waterfowl Habitat (referred as the Ramsar Convention) | ♦ It is a framework for international cooperation in the conservation and wise use of wetlands and their resources.  
♦ Recognizes the Walvis Bay Nature Reserve – a tidal lagoon consisting of Pelican Point, adjacent intertidal areas, sandbars serving as roosting sites and mudflats exposed during low tide (12,600 ha) as a Wetland of International Importance. |
| UN Convention for the Prevention of Marine Pollution from Land-based Sources | ♦ Concerns itself with the protection of marine fauna and flora by preventing marine pollution from land-based sources.  
♦ Contracted parties, are committed to take all possible steps to prevent pollution of the sea as well as the direct or indirect introduction of substances or energy |
by humans into the marine environment resulting in such adverse effects as harm to living resources and to marine ecosystems, hazards to human health, damage to services/facilities or interference with other legitimate uses of the area.

**International Convention on Oil Pollution Preparedness, Response and Cooperation of 1990**
- International maritime convention establishing measures for dealing with marine oil pollution incidents nationally and in co-operation with other countries.

**International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)**
- Dealing with the prevention of pollution of the sea by oil, sewage and garbage from ships.

- Namibia is obligated to protect and preserve the marine environment.
- Includes the prevention, reduction and control of pollution of the marine environment.

**Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter (London Convention, 1972)**
- Aims at controlling and preventing marine pollution and contains guidelines for dredged material known as the Dredged Material Assessment Framework (DMAF).
- Provides guidelines for dredging and disposal operations to minimize environmental damage.

- Legislative framework for maritime security issues.
- Aimed at Government, Port Authorities and shipping companies.

**IMO Biofouling Guidelines**
- Guidelines for the control and management of ships’ biofouling to minimize the transfer of invasive aquatic species.

**Abidjan Convention of 1981**
- The Convention for Cooperation in the Protection, Management and Development of the Marine and Coastal Environment of the Atlantic Coast of the West, Central and Southern Africa Region
- Provides an overarching legal framework for all marine-related programmes in West, Central and Southern Africa.

**Convention Concerning the Protection of the World’s Cultural and Natural Heritage**
- The objective is that effective and active measures are taken for the protection, conservation and presentation of the cultural and natural heritage.

**Stockholm Declaration on the Human Environment, Stockholm 1972.**
- Recognizes the need for a common outlook and common principles to inspire and guide the people of the world in the preservation and enhancement of the human environment.

---

**Table 3. Municipal by-laws, guidelines and regulations**

<table>
<thead>
<tr>
<th>Municipal By-laws, Guidelines or Regulations</th>
<th>Key Aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Integrated Urban Spatial Development Framework for Walvis Bay</strong></td>
<td>Overall vision to transform Walvis Bay to being the primary industrial city in Namibia</td>
</tr>
<tr>
<td></td>
<td>Aims to ensure that appropriate levels of environmental management is enforced for all developments in Walvis Bay</td>
</tr>
<tr>
<td><strong>Integrated Environmental Policy of Walvis Bay (Agenda 21 Project)</strong></td>
<td>Indicates the directions that the Municipality of Walvis Bay will move towards in the forthcoming years to fulfil its responsibilities to manage the environment of Walvis Bay together with the town’s residents and institutions</td>
</tr>
<tr>
<td></td>
<td>Focus on conservation and protection of environment</td>
</tr>
</tbody>
</table>
### Municipal By-laws, Guidelines or Regulations

<table>
<thead>
<tr>
<th>Key Aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Drainage and Plumbing By-Law of 1958</strong></td>
</tr>
<tr>
<td>(updated in 1982)</td>
</tr>
<tr>
<td>♦ Regulations regarding discharges into sewers</td>
</tr>
</tbody>
</table>

### 6 THE RECEIVING ENVIRONMENT

For purposes of this EMP a detailed environmental description is not provided. However, this section briefly summarises the most important environmental characteristics of the study area, as well as a short statement on the potential impacts/implications of the port operations on each.

#### 6.1 Locality and Surrounding Land Use

The commercial harbour of the Port of Walvis Bay is situated centrally on the west coast of Namibia. The port town of Walvis Bay is the biggest coastal town of Namibia and originated around the harbour. The harbour holds its value due to the natural deep waters of the bay, protected by the Pelican Point sand spit. Walvis Bay was originally established as mainly a fishing and port town and these two industries remain the main driving force behind the town’s economy. The port is surrounded by a variety of land uses including residential, business and industrial (Figure 5).

Of specific importance near the harbour are the Walvis Bay Lagoon, the salt works and the southern part of the bay west of the lagoon, which are the key components of a 12,600 ha Ramsar site (Wetland of International Importance). On land, Walvis Bay is further mostly surrounded by the Dorob National Park which falls under the management of the Ministry of Environment and Tourism (Figure 10).

#### Implications and Impacts

On its land side, the port is surrounded by residential, commercial and industrial properties. Noise emanating from port related activities may negatively impact on residents directly neighbouring the port. In addition, development and operations of the port may lead to increased traffic impacts. A shortage of available land surrounding the port places constraints on the potential development of the port. Therefore, an alternative location may be required for future large scale development.

The Port of Walvis Bay operates near a sensitive environment (Ramsar Site) and thus extra environmental consideration should be given and additional legislation may apply to the port. Significant environmental impacts could result in degradation of the environment.
6.2 CLIMATE
Walvis Bay is centrally located on the Namibian coastline in the arid Namib Desert. The arid conditions are a result of dry descending air and upwelling of the cold Benguela Current.

Namibia is situated within an anti-cyclone belt of the Southern Hemisphere. Winds generated from the high-pressure cell over the Atlantic Ocean blow from a southerly direction when they reach the Namibian coastline. As the Namibian interior is warm (particularly in summer), localised low-pressure systems are created which draw the cold southerly winds towards the inland desert areas. These winds manifest themselves in the form of strong prevailing south to south-westerly winds which often exceed 32 km/h (Figure 7). South to south-westerly winds generally reach peak velocity in summer months, and by late morning or early afternoon, and calm down as the interior cools down in the late evenings. During winter months, high velocity east to north easterly winds occur, occasionally exceeding wind speeds of 50 km/h. The east winds generated over the hot Namib Desert have a strong effect on temperature, resulting in
temperatures in the upper 30 degrees Celsius and tend to transport significant volumes of sand. Calm wind conditions throughout the year are rare at the coastal town (Figure 7)

Thick fog or low stratus clouds are a regular occurrence in Walvis Bay. This is due to the influence of the Benguela Current and forms the major source of water for the succulent and lichen flora in the Namib Desert. Variation in annual rainfall is very high and most communities within this environment are dependent on regular fog occurrences. Months with the highest likelihood of rainfall are January to April. Wind is predominantly south-westerly to south-south-westerly except in winter months when regular, strong east to northeast winds occur.

Climate Change and Sea Level Rise - Since 1960 the global average sea level rise is 1.8 mm per year while the average sea level rise for Walvis Bay is approximately 2 mm per year (Consulting Services Africa et al. 2009). Since most of Walvis Bay is at 2 m above sea level or less, this may have significant impacts on the town and port. Although future predictions on climate change and sea level increases are based on many variables, it is clear that in future the frequency of climate extremes will increase. The present day worst case scenario is that an extreme sea level of +1.5 m above land levelling datum (LLD) (LLD is approximately equal to mean sea level) will occur every 100 years. By 2030, this is predicted to occur once every year, mostly due to an increased frequency of storm events associated with climate change. The major impacts associated with this will be increased erosion of the shore line as well as inundation of low lying areas. These scenarios do not take into account the impact of polar ice melting or the scenario of Pelican Point no longer being present as a barrier protecting Walvis Bay. Should the predicted sea level rise of 20 cm become reality, it is possible that coastal set-back of up to 100 m can occur. For more information including all scenarios see Consulting Services Africa et al. (2009).

Transport is one of the sectors that will be impacted by climate change and sea level rise. This can be in the form of infrastructure damage through storm surges, increased number of strong winds resulting in poor visibility and collection of sand on roads and rail lines, and rainfall events leading to slippery roads, stagnant water on roads and damage to road surfaces. The port will rely on a fully functional and reliable transport sector for its operations and these impacts can thus lead to delays in receiving and distribution of goods.

| Table 4. Summary of climate data for Walvis Bay (Atlas of Namibia) |
|---------------------------------|----------------|
| Average annual rainfall (mm/a) | 0-50           |
| Variation in annual rainfall (%)| >100           |
| Average annual evaporation (mm/a)| 2,800-3,000   |
| Water deficit (mm/a)            | 1,901-2,100    |
| Average annual temperatures (°C)| 18-19          |
| Fog                             | Approximately 900 hours of fog per year |
Implications and Impacts

Due to the ability of the strong winds to carry sand as well as mineral ore dusts to sensitive receptors, wind is an important factor to be considered for the port operations. It has to be given serious consideration in the respective EMPs of Namport and the tenants. Wind is predominantly a strong south-westerly wind with occasional northerly winds. This means dust pollution at the port will normally be carried northeast to receptors such as industries in the town while it will be carried south to south east into town and residential areas during northerly winds. During east winds, contaminants carried by wind will travel into the bay and the lagoon entrance.

In terms of climate change and sea level rise, the port should be safe in the short to medium term future. Considering worst case scenarios in sea level change however, careful planning is needed to ensure the future integrity and safety of the port is maintained.
6.3 HYDRAULIC CONDITIONS
The Benguela Current flows in a north-westerly direction along the Namibian coast. The average speed of the current is between 0.25 and 0.35 m/s (DMC-CSIR, 2010). The most important hydraulic conditions are shown in Table 5 (Tractebel, 1998; COWI, 2003a; DMC-CSIR, 2010).

Water enters and exits the bay at the northern tip of Pelican Point (DMC-CSIR 2010). Incoming cold and denser water flows below the outflowing warmer water. Current velocities are on average 0.12 m/s with sporadic maximums up to 0.25 m/s.

A study in 1965 indicated a pre-dominant clockwise circulation of currents in the bay (Tractebel, 1998). This was later confirmed in the COWI (2003b) and DMC-CSIR (2010) studies. Circulation occurs mostly in the upper layers in the water column and is dependent on the wind direction and strength. The current pattern is clockwise in the morning, towards the south of the bay. At Pelican Point, the current flows mostly northward for the whole day. A general northward current is found along the east side of the bay, very close to the coast.

Modelling of water currents after construction of the new container terminal are depicted in Figure 8. Note that these are for the entire envisaged container terminal of which the first phase only was recently completed. From this figure it can be seen that, in the vicinity of the commercial harbour weak currents are expected while at the fishing harbour, the current flow is expected to be in a strong north-easterly direction along the quay walls.

### Implications and Impacts
Pollutants entering the water at the commercial harbour will result in reduced water quality at sensitive receptors down current, specifically seawater intakes of the fishing industry. This may potentially render the water unsuitable for use. Discharge of effluent from various industries in the area may lead to a greater cumulative impact on the water quality.

Pollutants may also be carried northward up the coastline by currents or by wind in the case of floating pollutants. The newly constructed container terminal offers some protection to the lagoon by providing a physical barrier which would limit pollutants from reaching its entrance channel.

### Table 5. The oceanographic and hydraulic conditions of the bay and the sea (adapted from Tractebel, 1998; COWI, 2003b; DMC-CSIR, 2010).

<table>
<thead>
<tr>
<th>Hydrological Conditions</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tides and sea level</td>
<td>Highest Astronomical Tide +1.97</td>
</tr>
<tr>
<td></td>
<td>Mean High Water of Spring Tide +1.69</td>
</tr>
<tr>
<td></td>
<td>Mean High Water of Neap Tide +1.29</td>
</tr>
<tr>
<td></td>
<td>Mean Level +0.98</td>
</tr>
<tr>
<td></td>
<td>Mean Sea Level +0.966</td>
</tr>
<tr>
<td></td>
<td>Mean Low Water of Neap Tide +0.67</td>
</tr>
<tr>
<td></td>
<td>Mean Low +0.27</td>
</tr>
<tr>
<td></td>
<td>Lowest Water of Spring Tide Astronomical Tide 0.00</td>
</tr>
<tr>
<td>Waves</td>
<td>60 % southerly</td>
</tr>
<tr>
<td></td>
<td>23 % south-south-westerly</td>
</tr>
<tr>
<td></td>
<td>7 % south-westerly</td>
</tr>
<tr>
<td>Ocean current</td>
<td>The Benguela current runs north-westerly along the Namibian coastline at a speed between 0.25 m/s to 0.35 m/s</td>
</tr>
<tr>
<td>Tidal current</td>
<td>Negligible</td>
</tr>
</tbody>
</table>
6.4 CORROSION ENVIRONMENT

The Namibian coastline is well known for being a very corrosive environment, which may be attributed to the frequent occurrence of salt-laden fog, periodic winds and abundance of aggressive salts (dominantly sodium chloride and sulphates) in the soil. The periodic release of hydrogen sulphide (H2S) from the ocean is also expected to contribute to corrosion potential. Table 6 presents corrosion comparison data for a number of locations in southern Africa, including Walvis Bay. The combination of high moisture and salt content of the surface soil can lead to rapid deterioration of metal and concrete structures.

Table 6. Average annual corrosion rate for various metals in different locations in southern Africa (Nickel Development Institute, 2014)

<table>
<thead>
<tr>
<th></th>
<th>Pretoria CSIR</th>
<th>Durban Bluff</th>
<th>Durban Bluff</th>
<th>Walvis Bay</th>
<th>Sasolburg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location Type</td>
<td>Rural, Very low pollution</td>
<td>Marine, Moderate Pollution</td>
<td>Marine, Moderate Pollution</td>
<td>Severe marine, moderate or low pollution</td>
<td>Severe marine, low pollution</td>
</tr>
<tr>
<td>SO2 Range µg/m³</td>
<td>6-20</td>
<td>19-39</td>
<td>10-47</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Fog days/year</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>113.2</td>
<td>NA</td>
</tr>
<tr>
<td>Average rainfall (mm/year)</td>
<td>746</td>
<td>508</td>
<td>1,018</td>
<td>8</td>
<td>677</td>
</tr>
<tr>
<td>Relative humidity range %</td>
<td>26-76</td>
<td>52-90</td>
<td>54-84</td>
<td>69-96</td>
<td>49-74</td>
</tr>
<tr>
<td>Temp. Range °C</td>
<td>6-26</td>
<td>9-25</td>
<td>16-27</td>
<td>10-20</td>
<td>5-20</td>
</tr>
<tr>
<td>Unpainted galvanized steel life, years</td>
<td>5-15</td>
<td>3-7</td>
<td>3-5</td>
<td>0.6-2</td>
<td>5-15</td>
</tr>
<tr>
<td><strong>Annual Corrosion Rate (mm/year)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stainless Steel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 316</td>
<td>0.000025</td>
<td>0.000025</td>
<td>0.000025</td>
<td>0.000279</td>
<td>0.000102</td>
</tr>
<tr>
<td>Type 304</td>
<td>0.000025</td>
<td>0.000076</td>
<td>0.000127</td>
<td>0.000406</td>
<td>0.000102</td>
</tr>
<tr>
<td>Type 430</td>
<td>0.000025</td>
<td>0.000406</td>
<td>0.000381</td>
<td>0.001727</td>
<td>0.000559</td>
</tr>
<tr>
<td>Aluminium Alloys</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 8. Comparison of ebb (top) and flood (bottom) scenarios after the construction of the new container terminal (Source: Hydrodynamic Modelling Report of DMC-CSIR 2010)
### Implications and Impacts

Chemical weathering of metal and concrete structures is a concern. Due to the extreme corrosive environment the choice of building materials is important and regular maintenance is essential to maintain the integrity of all infrastructure.

### 6.5 Fauna of the Bay

#### 6.5.1 Birds

Walvis Bay falls within Important Bird Area (IBA) NA014 and NA013 (Figure 9). Important Bird Area NA014 can be regarded as the most important coastal wetland area in southern Africa (Simmons et al. 1999). Of note is the Walvis Bay Lagoon, the salt works and the southern part of the bay west of the lagoon, which are the key components of the 12,600 ha Ramsar site (Wetland of International Importance) (Figure 10). It is important both as an over-wintering area for Palearctic migrant wader species as well as for African species such as Greater and Lesser Flamingos, Great White Pelican and Chestnut-Banded Plovers. The sewage ponds, situated about 3 km southeast of the study area, are regarded as sensitive artificial wetland. Although a manmade fresh water source, it is an attraction for pelicans and flamingos. The artificial wetland also support 53% of the duck and geese population in the area. The wetland is formed by the constant inflow of semi-purified water and supports extensive stands of reeds. There are flight paths for birds between the sewage ponds, the lagoon and the offshore bird breeding platform (Ghwano Island) north northeast of the harbour.

Important Bird Area NA013 consist of the coastal area between Walvis Bay and Swakopmund, and is approximately 30 km long and 700 m wide. Bird counts on this exceed 13,000 shorebirds of approximately 31 species, most of which are Palearctic migrants. IBA NAO13 is not only the richest shoreline in terms of shorebird density anywhere in southern Africa, but also supports the densest colony of breeding Damara Terns known (Scott & Scott 2013). Important in this area is the guano platform, or bird island, that provides roosting and breeding sites to large numbers of birds.

Some important species occurring within IBA NA014, are presented in Table 7, with notes on their status and threats.

#### Implications and Impacts

The aforementioned areas surrounding the harbour are important bird breeding and bird feeding grounds. Pollution events, specifically oil spills, can have serious negative effects on species like the Bank Cormorant. Bright lights used at night, such as leading lights, has the potential of disorientating birds like flamingos that fly at night. This may lead to collisions with man-made structures.
### Table 7. Key bird species in IBA N014

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Range</th>
<th>Status (Last Assessed)</th>
<th>Comments</th>
<th>Current Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank Cormorant <em>(Phalacrocorax neglectus)</em></td>
<td>Native to Namibia and South Africa</td>
<td>Endangered (2018)</td>
<td>Very rapid decline in small population</td>
<td>Human disturbance, displacement by seals, food shortages and low quality food</td>
</tr>
<tr>
<td>Lesser Flamingo <em>(Phoeniconaias minor)</em></td>
<td>Native to Namibia and South Africa</td>
<td>Near Threatened (2018)</td>
<td>Relatively large, but decreasing population</td>
<td>Habitat degradation and disturbance.</td>
</tr>
<tr>
<td>African Black Oystercatcher <em>(Haematopus moquini)</em></td>
<td>Native to Namibia and South Africa</td>
<td>Least Concern (2017)</td>
<td>Small increasing population</td>
<td>Human disturbance e.g. off-road driving on beaches</td>
</tr>
<tr>
<td>Damara Tern <em>(Sternula balaenarum)</em></td>
<td>Native to Namibia and South Africa</td>
<td>Vulnerable (2018)</td>
<td>Decline in small population</td>
<td>Human disturbance e.g. off-road driving on beaches</td>
</tr>
</tbody>
</table>

Source: The IUCN Red List of Threatened Species 2018-1; Simmons et al., 1999.
6.5.2 Marine Animals

The marine mammals occurring at various times in the Walvis Bay area are cetaceans: Common Bottlenose Dolphins, the Namibian endemic Heaveside’s Dolphins, Dusky Dolphins, Humpback Whales, Southern Right Whales and Pigmy Right Whales; as well as Cape Fur Seals. The Common Bottlenose Dolphin, Heaveside’s dolphin and Cape Fur Seal are seen most frequently (daily), the Pigmy Right Whale less frequently (monthly) and the rest infrequently as they are seasonal or infrequent visitors. The Common Bottle Nose Dolphin with a population of less than a 100 individuals is thought of as quite unique in being one of the smallest mammal populations in Africa.

Namibia has quite a large population of Cape fur seals. A large colony are present at Pelican Point. Historically, Cape fur seal populations showed significant declines in population numbers due to overharvesting. However, the Namibian population has shown significant increases over the last two decades with new populations of seals establishing all along the coast.
The Namibian coastal waters are home to five species of turtles and all five species are listed as threatened under the IUCN which is controlled through CITES. The most common occurring turtles near the proposed development are the Leatherback Turtle and Green Sea Turtle, with the Hawksbill Sea Turtle occurring occasionally.

**Implications and Impacts**

Whales, dolphins and seals are often considered as flagship species to which people attach great inherent value. This is evident from the million dollar tourism industry based on the presence of these mammals. Pollution may have a negative impact on locally occurring populations. Increased ship traffic may also result in more frequent ship strikes with whales, dolphins and turtles. Excessive noise producing events in the marine environment may also negatively impact on marine mammals. Pollution of the marine environment may negatively impact on all marine animals.

### 6.6 Socio Economic Environment

It is important that the key socio-economic trends in Walvis Bay are understood as a basis for the EMP.

#### 6.6.1 Population

At local level, the 2011 population census indicates that Walvis Bay has an urban population size of 62,096 (Namibia Statistics Agency, 2011). However, a more recent estimate is in the vicinity of 100,000. Walvis Bay is the most populated town in the Erongo Region, mainly as a result of the harbour and related industries depending on it. This include the fishing sector, an important employment sector. Operations of the port itself, as well as various port linked operations such as the fishing industry operating through the port, contributes significantly towards employment in Walvis Bay and Namibia. The total employment of the fishing sector alone is estimated at 2% of the total Namibian workforce.

| Demographic characteristics of Walvis Bay, the Erongo Region and Nationally (Namibia Statistics Agency, 2011) |
|-------------------------------------------------|-------------------------------------------------|------------------------------------------|
| Walvis Bay | Erongo Region | Namibia |
| Population (Males) | 30,500* | 79,823 | 1,021,912 |
| Population (Females) | 29,000* | 70,986 | 1,091,165 |
| Population (Total) | 62,096 | 150,809 | 2,113,077 |
| Unemployment (15+ years) | N/A | 22.6% | 33.8% |
| Literacy (15+ years) | N/A | 96.7% | 87.7% |
| Education at secondary level (15+ years) | N/A | 71.8% | 51.2% |
| Households considered poor | N/A | 5.1% | 19.5% |

**Implications and Impacts**

The operations of the port provide direct and indirect employment opportunities. This includes employment within Namport as well as the various industries utilising the port (e.g. mining, fishing, fuel, etc.). The potential significant population growth in Walvis Bay as a result of in-migration of job seekers will add strain to service delivery.

Social ills and the spread of diseases are potential negative social impacts. These are often related to the shipping and trucking industry which are central to the port’s continued existence.
Electricity Supply

Electricity demand and supply forecasts are provided in Figure 12 (Hatch 2014). Over recent years, Namibia and the rest of the Southern African Power Pool (SAPP) have struggled to meet the demand to supply electrical power. This demand forecast corresponds relatively well with actual usage (Figure 13). In 2017 the total electricity usage was just under 2,500,000 MWh which translates to 694 MW. This is slightly below the prediction of over 700 MW for the same year.

A number of generation projects are conceptual ideas or in a more advanced stage of planning. These projects include the Kudu Gas Project, the Baines Hydropower Scheme and a 250 MW power station in the Erongo Region. At Lüderitz the first 5 MW wind farm is operational. A number of small photovoltaic plants have also been constructed at various locations throughout Namibia in recent years.
Figure 12. Electricity supply and demand forecast of Namibia (Adapted from Hatch 2014)

Figure 13. Actual electricity usage 2006 to 2017 (ECB Annual Report 2018)

Implications and Impacts

The cumulative effect of mining, industrial, tourism and residential development in Namibia will exacerbate the current power shortages unless investment in additional generation capacity is made. It is therefore imperative that NamPower be regarded as one of the key stakeholders in the operation of the port and its future planning.

6.6.3 Water Supply

Potable water is a scarce resource in the central coastal areas. Approximately 22,000,000 m³ of water is supplied by NamWater from the Omdel and Kuiseb aquifers, as well as the Orano owned Wlotzkasbaken Desalination Plant (Figure 14 and Figure 15). Current demand estimates exceeds the supply capacity. NamWater however plans to meet the demand by increasing its reliance on the Wlotzkasbaken Desalination Plant. In 2018 about 10,000,000 m³ of desalinated water was acquired, but this will in future be increased to 15,000,000 m³ (Figure 15).
Figure 14. Central Namib water supply
Implications and Impacts

With increased operations in the Port of Walvis Bay, the demand for potable water will increase. The envisioned increase in port activities may increase water consumption through, for example, dust suppression activities. It is therefore imperative that NamWater be regarded as one of the key stakeholders in the operation of the port and its future planning.

6.6.4 Waste Removal

Namport follows its in-house operating procedures for waste management. Namport’s waste management at the commercial harbour is currently outsourced to the Walvis Bay Municipality. Under the IMO all ports should provide sufficient waste disposal facilities for visiting vessels.

General and hazardous waste are removed by the municipality and sorted at the municipal landfill site or hazardous waste site as necessary. Waste is then classified into types such as hazardous, general and recyclable. This may include the following: black sand (oil polluted), boxes, general domestic waste, industrial waste, metals, tyres and other. The municipal hazardous waste disposal facility was constructed in 2002 to aid in the disposal of various hazardous wastes, including contaminated soils and materials and oil sludge.

Future development of the port, increased cargo throughput, as well as an increase in population of the town, will increase the amount of waste generated. The landfill site itself currently has sufficient capacity in terms of the space available, and sand resource to cover the waste, to cope with the expected increases. Planning is more critical for the conveyance efficiencies that will be challenged as volumes and tonnage increase.

Implications and Impacts

Development of the port will only contribute a small portion to the total waste received by the waste disposal site. Domestic waste due to the population increase in Walvis Bay may is likely to have a greater impact. As responsible authority, the Walvis Bay Municipality must ensure that provision is made for waste disposal and sewage removal given the projected growth of the town.
6.6.5 Transport
A network of road transport routes (corridors) connects Walvis Bay to multiple SADC countries such as Angola, Zambia, Botswana and South Africa. The Walvis Bay Corridor Group was established in 2000 as a public-private partnership in order to promote utilisation of these corridors, both on land and by ship to and from Namibian ports. Walvis Bay is accessible from central Namibia by two Roads, the B2 main road and the M36. Walvis Bay is serviced by the second largest airport in Namibia, with daily national flights as well as direct flights to South Africa. The railway line to the port of Walvis Bay is also used for the import and export of cargo such as mining goods, ore, chemicals etc., alleviating the loads on the roads to some extent.

In terms of transportation of cargo by road from the port, all trucks leaving the port must proceed to the Roads Authority weighbridge (Figure 3). Dangerous goods and normal cargo proceed on different routes through Walvis Bay. Dangerous goods access and leave the port through the South Gate and from there proceed down 5th Road to Union Street and to the weighbridge when required. Trucks transporting explosives are also only allowed to operate during certain times of the day, specified by the Ministry of Safety and Security and the local authorities, in order to minimize the risk of potential explosions, and to reduce the injury of people should an explosion occur. Explosive goods are transported in small convoys escorted by the Namibian Police. The chance of an explosion is extremely small if all material safety data sheet regulations are adhered to (Faul & Botha, 2017).

Namibia and Botswana have also in the past signed an agreement which will enable coal from the Mmamabula Coalfields in Botswana to be exported via the Port of Walvis Bay. It is estimated that an average of 24,000,000 tons per annum, and a maximum 100,000,000 tons per annum, of coal will be exported via the port when this realises (Botha et al., 2016). For the transport of coal from Botswana, agreements were put in place to build the Trans-Kalahari Railway Line. This will include construction of new lines and the upgrade of existing lines between Botswana and Walvis Bay. At this stage however, the coal export project is not expected to realise in near future, if at all.

**Implications and Impacts**

With increased imports and export via the Port of Walvis Bay the road and rail network to Walvis Bay may be impacted. Cargo may also pose a health and safety risk to nearby receptors. It is therefore imperative that TransNamib and Roads Authority be regarded as key stakeholders in the operation of the port and its future planning.
7 STAKEHOLDER CONSULTATION

Consultation with stakeholders and the public formed an integral part of the environmental assessment processes. Identified stakeholders were invited via e-mail and a public meeting was advertised twice in two separate national newspapers. The public meeting was conducted in Walvis Bay.

Views, comments and opinions expressed by I&APs attending the meeting were noted and incorporated into this report. A list of registered stakeholders and I&APs together with proof of the public consultation process are presented in Appendix B and the minutes and attendance lists of the meeting are presented in Appendix C.

Through stakeholder communication and the public meetings, it became evident that some of the major expectations and concerns regarding operations of the Port of Walvis Bay are:

Positive:

❖ Jobs are created and contracts sustained through operations of the port and this helps alleviate unemployment and poverty.
❖ Options for economic diversification through for example the provision of support services for the port.

Negative:

❖ Deterioration of the marine environment and impacts on protected areas through pollution e.g. dust, oil spills and litter from vessels.
❖ Impact of noise and dust on residential properties.
❖ Deterioration of roads, and traffic impacts due to heavy vehicles accessing and leaving the port.

Figure 16. Road cargo transport routes (Faul & Botha, 2017)
8 ENVIRONMENTAL MANAGEMENT PLAN

The purpose of this section is to list the most pertinent environmental impacts that are expected from the operational and possible minor construction and maintenance activities of the Port of Walvis Bay. The EMP provides management options to ensure possible negative impacts are minimised. An EMP is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigation measures might be included if necessary. The environmental management measures are provided in the tables and descriptions below. These management measures should be adhered to during the various phases of the operation of the port. This section of the report can act as a stand-alone document. All Namport personnel and contractors taking part in the operations of the port should be made aware of the contents in this section, so as to plan the operations accordingly and in an environmentally sound manner. In addition, respective tenant EMPs, where required, should take into consideration the conditions stipulated in the overarching Namport EMP and these should be incorporated into lease contracts.

The scope of the EMP is:

- to include all components of any construction activities (upgrades, maintenance, etc.) and operations of the port;
- to prescribe the best practicable control methods to limit the environmental impacts associated with the operation of the port;
- to monitor and audit the performance of operational personnel and tenants in applying such controls; and
- to ensure that appropriate environmental training is provided to responsible operational personnel, including those of tenants.

Various potential and definite impacts will emanate from the construction and operational phases. The majority of these impacts can be mitigated or prevented. Due to the nature of the surrounding areas, cumulative impacts are possible and include surface water contamination, noise and traffic impacts.

8.1 PLANNING

During all phases of planning, operations, construction/maintenance and possible decommissioning of the port, it is the responsibility of Namport to ensure they, and their tenants, remain compliant with all legal requirements. Namport must also ensure that all required management measures are in place prior to and during all phases, to ensure potential impacts and risks are minimised. The following actions are recommended for the planning phase and should continue during operations, maintenance/construction and possible decommissioning of the port or components of the port:

- Ensure that all necessary permits from the various ministries, local authorities and any other bodies that govern the operations and construction activities of Namport and the port tenants are obtained and remain valid throughout project execution. These include permits from the Ministry of Mines and Energy for fuel handling and storage and effluent disposal permits from the Ministry of Agriculture, Water and Forestry.

- Ensure all appointed contractors, employees and tenants enter into an agreement which includes the need to adhere to the stipulations within the EMP. Ensure that the contents of the EMP are understood by the contractors, sub-contractors, employees, tenants and all personnel present or who will be present on site.

- Make provisions to have an environmental management division to implement the EMP and oversee occupational health and safety as well as general environmental related compliance. Namport’s environmental management hierarchy can be seen in Figure 17.

- Have emergency plans, equipment and personnel on site, where applicable, to deal with all potential emergencies. Documents and planning related to this include:
  - EMP / risk management / mitigation / Emergency Response Plan and HSE Manuals;
  - Adequate protection and indemnity insurance cover for incidents;
  - Compliance with the provisions of all relevant safety standards;
  - Procedures, equipment and materials required for emergencies, inclusive of firefighting and oil spill contingency plans;
If one has not already been established, establish and maintain a fund for future ecological restoration of the project site should a spill occur or project activities cease and the site is decommissioned and environmental restoration or pollution remediation is required.

Establish a reporting system to report on aspects of construction activities, operations and decommissioning as outlined in the EMP.

Submit monitoring reports bi-annually, as per the requirements of the Department of Environmental Affairs, to ensure compliance and future environmental clearance certificate renewal.

Regularly review and update the EMP and related documentation to include all new developments or projects where applicable.

Appoint a specialist environmental consultant to update the EMP and apply for renewal of the environmental clearance certificate prior to expiry.

Figure 17. Environmental management hierarchy of Namport
8.2 **EMPLOYMENT**
Skilled and professional labour are required for the operations of the port. Employment should preferably be sourced locally while skilled labour/contractors should only be sourced from elsewhere if not locally available.

**Desired outcome:** Provision of employment to local Namibians.

**Actions**

**Mitigation:**
- The proponent must employ local Namibians where possible.
- If the skills exist locally, employees must first be sourced from the town, then the region and then nationally.
- Deviations from this practice must be justified.
- Local businesses and industries should be supported.

**Responsible Body:**
- Proponent
- Contractors
- Tenants

**Data Sources and Monitoring:**
- Namport Operating and System Procedures
- Bi-annual summary report based on employee records.
8.3 **Skills, Technology and Development**

The nature of port operations is such that training of the workforce is essential. Skills are transferred to an unskilled workforce for general tasks. The technology required for port-related operations continuously improve and new technological developments are introduced. Development of people and technology are key to the economic development of the town and region.

**Desired outcome:** To see an increase in skills levels of local Namibians, as well as development and technological advancements in the port-related industry.

**Actions**

**Mitigation:**
- If the skills exist locally, employees and contractors must first be sourced from the town, then the region and then nationally. Deviations from this practice must be justified.
- Training must be provided to Namibians to employ a predominantly Namibian workforce.
- Skills development, training and improvement programs to be made available as identified during performance assessments.
- Employees to be informed about parameters and requirements for employer references upon employment.

**Responsible Body:**
- Proponent
- Tenants
- Contractors

**Data Sources and Monitoring:**
- Namport Operating and System Procedures
- Record should be kept of all assessments of personnel and requirements for training that are identified.
- All training provided must be recorded and kept on employee files.
- Ensure that all training is certified, or managerial references provided (proof provided to the employees), inclusive of training attendance, completion and implementation.
- Bi-annual summary report based on all training related records kept.
8.4 **Revenue Generation**

The port supports the fishing and mining industry, two of the major national revenue sources for Walvis Bay and Namibia. The Port of Walvis Bay also acts as a gateway for international trade for Namibia and the neighbouring landlocked countries. Export and import of products via the port as well as other port services such as stevedoring and ship repair further contributes to local, regional and national income.

**Desired outcome:** Contribution to National Treasury through taxes, as well as, the local and regional economy.

**Actions**

**Mitigation:**
- The port should be promoted as part of the vision of Namibia in becoming a logistics hub.
- Local businesses and industries should be supported as far as is practically possible.
- Sound financial accounting processes and adherence to all laws pertaining to the payment of revenue.

**Responsible Body:**
- Proponent
- Tenants
- Contractors

**Data Sources and Monitoring:**
- Namport Operating and System Procedures
- Financial related legislation governed by the Ministry of Finance.
- Bi-annual summary report based on contributions towards the national economy.
8.5 **Demographic Profile and Community Health**

Developments attract job seekers and this may lead to in-migration and growth in informal settlements. The various components of the port are reliant on a relatively large labour force during operational and construction phases. Being an existing port, a change in the demographic profile of the local community is not likely in the immediate future. Community health impacts may include factors such as communicable disease like HIV/AIDS and alcoholism/drug abuse. This is typically associated with trucking and shipping (transport of products to international markets). The increase in passenger liners to the port may lead to an increased amount of tourist visiting the town. The presence of foreign people in the area may potentially increase the risk of criminal and socially/culturally deviant behaviour.

**Desired Outcome:** To prevent the in-migration and growth in informal settlements and to prevent the spread of communicable diseases and prevent / discourage socially deviant behaviour.

**Actions:**

**Prevention:**
- Employ only local people from the area, deviations from this practice should be justified appropriately.
- Provide suitable housing for employees of the port, especially when employing non-local staff.
- Adhere to all municipal by-laws relating to environmental health which includes but is not limited to sanitation requirements.
- Ensure the port is sufficiently equipped to handle the number of tourist disembarking passenger liners.
- Provide measures to manage informal traders from targeting tourists originating from the port.

**Mitigation:**
- Educational programmes for employees on HIV/AIDs and general upliftment of employees’ social status.
- Appointment of reputable contractors.

**Responsible Body:**
- Proponent
- Tenants

**Data Sources and Monitoring:**
- Namport Operating and System Procedures
- Port inspection sheets and checklists for all areas, which may present environmental health risks, kept on file.
- Bi-annual summary report based on educational programmes and training conducted.
- Bi-annual report and review of employee demographics.
8.6 Traffic
An increase in traffic to and from the port may increase congestion in the town and port, increase the risk of accidents, result in deterioration of road surfaces, and cause vibration related damage to historic buildings. With the construction of the new container terminal, container traffic is expected to increase significantly. An increase in passenger liners through the Port of Walvis Bay is also expected. This, along with traffic increases, may also result in an increase in informal traders in the streets, resulting in safety risks and further traffic related impacts. This may also negatively impact on the tourism industry. With the increase in rail transport to and from the port, traffic may be blocked at rail level crossings. Train and vehicle accidents may also occur.

Currently the Port of Walvis Bay is serviced mainly by two separate gates (Figure 4). The main gate and the container gate, with a third gate situated at the northern end of 5th Road (South Gate) used for abnormal loads which include the trucks transporting salt, explosives and construction vehicles during the construction of the new container terminal. With the current and future increase in imports and exports through the port, the volume of vehicles moving through these gates may congest the related streets. Further, due to the way in which the town developed around the port, access to the port is only possible through the town. This presents problems in terms of traffic and its associated impacts like noise, traffic congestion and potential accidents.

To manage this, Namport proposed the design and construction of a new gate complex, to include the following main components: 1) the closure of the existing container gate; 2) the conversion of the existing main gate into an exit gate only; 3) construction of a multi-lane entrance gate; and 4) construction of a truck staging/queuing area. See Faul A, Botha P. 2017. Environmental Management Plan for the Design and Construction of the New Main Gate Complex and Truck Staging Area in the Port of Walvis Bay for more detail.

**Desired Outcome:** Minimum impact on traffic, roads and buildings and no transport or traffic related incidents.

**Actions**

**Prevention:**
- In cooperation with the local authority, erect clear signage regarding restricted areas and roads, access and exit points to the port, speed limits, traffic rules, rail level crossings, etc.
- New and existing operations in the port, which result in high traffic volumes, must be assessed and suitable preventative and mitigation measures explored. This includes rail transport impacts.

**Mitigation:**
- Trucks should not be allowed to obstruct any traffic or access points to any other businesses and facilities on the routes through Walvis Bay.
- If any extraordinary traffic impacts are expected, traffic management should be performed in conjunction with the local traffic department.
- Should hazardous cargo be transported, cognisance should be taken of Namport’s operating procedures for Handling and Storage of Dangerous Cargo. This will involve planning of the route as well as arrangements with the Municipality and the Ministry of Safety and Security.
- The placement of signs to warn and direct traffic will mitigate traffic impacts.
- The development of the proposed new main gate complex and truck staging area is expected to mitigate traffic impacts.

**Responsible Body:**
- Ministry of Works and Transport
- Proponent
- Tenants
- Contractors

**Data Sources and Monitoring:**
- Namport Operating and System Procedures
- Transport Regulations
- Any complaints received regarding traffic issues should be recorded together with action taken to prevent impacts from repeating itself.
A report should be compiled every 6 months of all incidents reported, complaints received, and actions taken.

Figure 18. Proposed gate development (Faul & Botha, 2017)
8.7 **Health, Safety and Security**

Every activity associated with the port is reliant on human labour and therefore exposes individuals to health and safety risks. Injuries can occur due to incorrect lifting of heavy equipment and materials, falling from heights, stacked items tipping over, getting caught in moving parts of machines, accidents involving forklifts and vehicles, exposure to hot and cold temperatures, grit blasting activities and inhalation of grit blasting dust and paint fumes. Some chemicals handled and stored in the port are hazardous with inherent health risks to personnel on site when inhalation, accidental ingestion, eye or skin contact occurs. Security risks are related to unauthorized entry, theft and sabotage.

Asbestos may be present in old buildings. These present a health risk, especially during demolition.

Mining concentrate and ore that is transported via the port may contain materials that have inherent health risks. This may include for example asbestos. Materials may also have radioactive properties.

**Desired Outcome:** To prevent injury, health impacts and theft.

**Actions**

**Prevention:**
- All Health and Safety standards specified in the Labour Act should be complied with.
- Consider the World Health Organisation: International Health Regulations (2005) with specific reference to Section 4 (no. 3): “Strengthen public health security in travel and transport”.
- Strict security control at the entrance gates including alcohol testing and access permit checks.
- For any mining ore that will be transported via the port, the health related risks should be assessed, including whether asbestos is present or whether the ore has radioactive properties. Liaison with the Ministry of Health and Social Services and the National Radiation Protection Authority is essential.
- Clearly label dangerous and restricted areas as well as dangerous equipment and products.
- Clearly demarcate areas where access is prohibited without special permission or areas where specific personal protective equipment (PPE) is required.
- Provide all employees with required and adequate PPE where needed.
- Equipment and products on site must be placed in a way that does not encourage criminal activities (e.g. theft).
- Ensure that all personnel receive adequate training on operation of equipment and handling of hazardous substances.
- Always follow safe stacking and storage methods.
- Implementation of maintenance register for all equipment, fuel and hazardous substance storage areas.
- Lockout / tagout procedures should be followed where applicable.
- Compile and maintain hazard analysis and critical control points (HACCP) program for all activities.

**Mitigation:**
- Selected personnel should be trained in first aid and a first aid kit must be available on site. The contact details of all emergency services must be readily available.
- Implement and maintain an integrated health and safety management system, to act as a monitoring and mitigating tool, which includes: colour coding of areas, operational, safe work and medical procedures, permits to work, emergency response plans, housekeeping rules, MSDS’s and signage requirements (PPE, flammable etc.).
- Security procedures and proper security measures must be in place to protect workers and clients.
- Strict security that prevents unauthorised entry into restricted areas.
- Asbestos structures, if any, must be replaced or made inert. All asbestos demolitions must be performed by accredited contractors.
Responsible Body:
- Proponent
- Tenants
- Contractors

Data Sources and Monitoring:
- Namport Operating and System Procedures
- Applicable legislation and regulations (e.g. health act, labour act, atomic energy act regulations, etc., World Health Organisation (WHO) guidelines)
- Any incidents must be recorded with action taken to prevent future occurrences.
- A report should be compiled every 6 months of all incidents reported. The report should contain dates when training was conducted and when safety equipment and structures were inspected and maintained.
8.8 FIRE AND EXPLOSION
Operational and construction activities may increase the risk of the occurrence of fires. Fuel stored in the bulk fuel storage facilities, in tanker ships and in vessels presents a fire and explosion risk. Similarly do chemicals imported and exported in bulk via the port such as sulphur and mining explosives. Other flammable chemicals may also be on site in small quantities. The first line of defence against a fire will therefore have to be Namport crew and tenants, as there may be a delay in the response time of the firefighting department.

**Desired Outcome:** To prevent property damage, possible injury and impacts caused by uncontrolled fires.

**Actions:**
**Prevention:**
♦ Ensure all fuel and chemicals are handled, transported and stored according to MSDS instructions.
♦ Incompatible chemicals must be segregated at all times.
♦ Maintain regular site, mechanical and electrical inspections and maintenance.
♦ Clean all spills / leaks without delay.
♦ Follow SANS standards for operations and maintenance of fuel handling and storage.

**Mitigation:**
♦ A holistic fire protection and prevention plan is needed. This plan must include an emergency response plan, firefighting plan and spill recovery plan and should be developed in conjunction with all tenants and the firefighting department of the port and the Municipality of Walvis Bay.
♦ All tenants must submit, to Namport, emergency response plans for firefighting procedures related to the products they handle. These should be concise, to the point and immediately accessible and should outline the firefighting methods relevant to the specific products that may be on fire. This will enable Namport and the town’s firefighting department to respond to a fire with the correct firefighting techniques and materials. This is crucial since incompatible materials may aggravate fires and lead to explosions. Where toxic gases may be generated the appropriate PPE must be recommended.
♦ Firefighting methods and products must be compatible with the type of fire (i.e. electrical, hydrocarbon, chemical, etc.).
♦ For fuel storage and handling, special notice must be taken of the regulations stipulated in sections 47 and 48 of the Petroleum Products and Energy Act, 1990 (Act No. 13 of 1990).
♦ Maintain firefighting equipment, good housekeeping and personnel training (firefighting, fire prevention and responsible housekeeping practices).

**Responsible Body:**
♦ Municipal firefighting department
♦ Proponent
♦ Tenant
♦ Contractors

**Data Sources and Monitoring:**
♦ Namport Operating and System Procedures
♦ A register of all fire related incidents must be maintained on a daily basis. This should include measures taken to ensure that such incidents do not repeat themselves.
♦ A report should be compiled every 6 months of all incidents reported. The report should also contain dates when fire drills were conducted and when fire equipment was tested and training given.
8.9 AIR QUALITY AND DUST

In the Port of Walvis Bay, the major contributor to deteriorated air quality is windblown dust generated during ship repair procedures (grit blasting and spray painting) and during chemical and mining ore (e.g. manganese) handling. This is aggravated during periods of strong wind (41 to 61 km/h), which sometimes occurs in Walvis Bay. Dust may pose health risks to workers and nearby residents, but can also impact on the surrounding industries such as contaminating salt stored in bulk in the harbour, as well as impact on seawater users such as the fishing industry due to deteriorating seawater quality. Deteriorated seawater quality can in turn impact on marine ecology as well as the mariculture industry.

Desired Outcome: To limit generation of airborne dust and thus prevent health impacts, contamination of fish from fishing vessels, and deterioration of the marine environment.

Actions

Prevention:
- Implement dust suppression methods where applicable (e.g. wetting with water, covering loads, netting, etc.) Care should however be taken to limit the volume of water used for dust suppression.
- All bulk cargo on trucks and trains entering and exiting the port must be covered to contain dust.
- Any loading / offloading activities must cease if dust becomes airborne. Loading / offloading can continue after mitigation measures to reduce dust generation/transport have been implemented, or when wind speeds decrease.
- Cut-off wind speeds should be provided for grit blasting and spray painting activities. Activities can continue after mitigation measures to reduce dust generation/transport have been implemented, or when wind speeds decrease.

Mitigation:
- All staff working in dust producing environments must wear dust masks and related PPE.
- A complaints register should be kept for any air quality related issues and mitigation steps taken to address complaints where necessary.

Responsible Body:
- Proponent
- Tenants
- Contractors

Data Sources and Monitoring:
- Namport Operating and System Procedures
- Any complaints received regarding dust or other air quality impacts should be recorded with notes on action taken.
- Real time wind direction and velocity monitoring which can be linked to air quality monitoring should be initiated.
- Dust (air quality) monitoring must be conducted to determine the extent and source of dust pollution.
- All information and reporting to be included in a bi-annual report.
8.10 Noise
The site is situated in an industrial area where no limitations on the operating hours exist. Noise pollution will exist due to heavy vehicles accessing the site for delivery and collection of products, the use of forklifts (audible warning signs), loading and offloading of ships, handling of containers, construction activities, etc. Noise may impact workers and personnel on site as well as neighbouring and nearby residential areas and tourist establishments.

Offshore construction activities like pile driving for jetty construction may impact on marine mammals if any are nearby.

**Desired Outcome:** To prevent any nuisance to neighbours, hearing loss in workers and negative impacts on marine mammals.

**Actions**

**Prevention:**
- Follow Labour Act Regulations - Noise Regulations (Regulation 197), and / or WHO guidelines on maximum noise levels (Guidelines for Community Noise, 1999), to prevent hearing impairment for workers on site and a nuisance for nearby residential areas / neighbours.
- Minimize or prevent noise producing activities and plan to restrict these to daytime as far as practically possible. Limit construction work to daylight hours.
- All machinery must be regularly serviced to ensure minimal noise production.
- The use of low frequency white noise or flashing lights should be considered instead of audible high frequency warning signals for moving forklifts or trucks.

**Mitigation:**
- Erect temporary or permanent noise barriers / sound baffles, should the need arise.
- Placement of noise producing equipment, e.g. compressors, in such a way that noise is directed away from receptors and / or are attenuated.
- Where possible, use infrastructure to act as noise barriers to sensitive environments.
- Hearing protectors as standard PPE for workers in situations with elevated noise levels.
- Obtain specialist input on marine mammal impacts and mitigation thereof when underwater noise will be generated (e.g. pile driving). This may include choosing of methods or equipment that with the least noise generating characteristics.

**Responsible Body:**
- Proponent
- Tenants
- Contractors

**Data Sources and Monitoring:**
- Namport Operating and System Procedures
- Labour Act Regulations - Noise Regulations (Regulation 197)
- WHO Guidelines
- Records to be kept where noise surveys or medical examinations (of labourers) are required as per the Labour Act.
- Maintain a complaints register.
- Bi-annual report on complaints and actions taken to address complaints and prevent future occurrences.
8.11 Waste Production

Various waste streams are produced in the port. Waste may include hazardous waste (fuels, oils, hydraulic fluids, chemicals, batteries, contaminated soil or water such as bilge water, etc.), non-hazardous wastes (metal, plastic, paper, glass and other forms of domestic waste, etc.), construction wastes (building rubble), sewage and effluents. Hazardous waste poses a threat to workers on site and to the marine and coastal environment. Plastics and other waste entering the ocean and environment, especially due to illegal dumping from vessels, may harm marine as well as land based animals when washing ashore. This can also result in a visual impact that may affect the tourist industry.

Desired Outcome: To reduce the amount of waste produced and prevent pollution and littering.

Actions

Prevention:
- Waste reduction measures should be implemented and all waste that can be re-used / recycled must be kept separate.
- Ensure adequate waste storage facilities (bins, drums and / or bags) are available and that these are clearly labelled to allow for segregation of wastes into different classes.
- Education of personnel is paramount to create awareness for the proper handling and disposal of waste.
- Ensure waste cannot be blown away by wind.
- Prevent scavenging (human and non-human) at waste storage sites.
- Contaminated bilge water, wash water, etc. should be treated as potentially hazardous waste that must be disposed of at appropriately classified facilities.
- Ships at anchor in the port area must be monitored for any illegal dumping of wastes.
- Waste in the port area, in the harbour water, and on the coastline within port limits must be regularly removed and disposed of.
- No waste streams may be directed into the ocean without a disposal permit and then only under conditions imposed by the permit.

Mitigation:
- Liaise with the municipality or private contractors regarding handling of different waste streams.
- Waste should be disposed of regularly and at appropriately classified disposal facilities. This includes hazardous material (empty chemical containers, contaminated rugs, paper, water and soil) that are collected by authorised and licenced waste collection and handling contractors.
- See the MSDS available from suppliers for disposal of contaminated products and empty containers.
- Waste water and sewage must be disposed of according to their relevant permit requirements.

Responsible Body:
- Proponent
- Tenants
- Contractors

Data Sources and Monitoring:
- Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter
- Namport Operating and System Procedures
- Municipality and / or Ministry of Agriculture Water Affairs and Forestry permit requirements for sewage and effluents.
- Conduct monthly sampling and analysis of both industrial effluents released into the ocean (e.g. fish factories) and sewage. This is to ensure compliance to the Model Sewerage and Drainage Regulations or relevant effluent disposal permits issued by the Municipality or Ministry of Agriculture Water Affairs and Forestry. Should compliance be ascertained, the monitoring regime can be adapted to bi-annually. Where non-compliance is found measures should be implemented / enforced to rectify the situation.
- Copies of valid permits of authorised hazardous waste collection and handling companies to be kept on file.
- A register of hazardous waste disposal activities should be kept (e.g. disposal certificates). This should include type of waste, volume as well as disposal method/facility.
- Any complaints received regarding waste should be recorded with notes on action taken.
- All information and reporting to be included in a bi-annual report.
8.12 **GROUNDWATER, SURFACE WATER AND SOIL CONTAMINATION**

Operations in the port entail the storage and handling of various potential pollutants that may present a contamination risk of the environment. These include hydrocarbon and synthetic fuels, oils and hydraulic fluids, chemicals, mineral ores, waste products not contained, effluent discharges, etc.

Spillages such as heavy fuel oil and diesel from vessels within port limits when anchored or docked, as well as during offloading, loading and maintenance of vessels further poses a risk to the environment.

Contamination of surface water within the harbour may in return lead to ecological impact, especially of the nearby Walvis Bay Lagoon, as well as significant economic impacts on various industries depending on seawater for their operations, such as the fishing industry, mariculture and the salt works.

**Desired Outcome:** To prevent the contamination of water and soil.

**Actions**

**Prevention:**
- Spill control structures and procedures related to fuel installations including the bulk fuel storage facility must be in place according to SANS standards or better.
- All fuel installations and tanks must conform to relevant SANS standards.
- Regular inspection and maintenance of pipelines, sumps, separators, vehicles, forklifts, cranes, etc. should take place.
- Any leaks detected must be repaired without delay and any maintenance that must occur within the port area must be performed on spill containment slabs or over drip trays.
- Hazardous waste and contaminated water and soil must be disposed of at an appropriately classified facility or by approved contractors. Hazardous waste disposal certificates must be kept on file.
- Warehouses for mineral ore and chemical storage must remain closed with adequate dust suppression systems to limit or prevent the formation of windblown dust.
- Adequate dust suppression for bulk storage of mineral ores in uncovered stockpiles.
- Any mineral ore and/or chemicals trapped in tyres must be cleaned prior to vehicles leaving warehouses or bulk storage areas of these products. The use of rumble grids and physical inspection of tyres should be implemented.
- For bulk bags the stacking heights must be observed to prevent bag damage and product spillage.
- All hazardous substances, such as sulphuric acid and fuel, must be stored in a properly bunded area to prevent any spillages from entering the surrounding environment.

**Mitigation:**
- Any fuel spillage of more than 200 litre must be reported to the Ministry of Mines and Energy.
- Emergency response plans and spill contingency plans must be in place and include all fuels, chemicals or hazardous substances being handled. In the case of tenants, copies of these documents must be submitted to Namport.
- Spill containment equipment such as booms and absorbents must be readily accessible. Training in the use of these are paramount. This is also important for any bunkering events within port limits.
- During bulk fuel offloading, temporary booms must be installed around the offloading area to prevent the spread of fuel, should a spill or leak occur.
- Any mineral ore, chemical dust (e.g. sulphur), hydrocarbon spills or any other hazardous substance spill on the quay area must be cleaned and disposed of to prevent it from entering the ocean either by wind or water runoff.
- For any chemicals that may form part of effluent to be discharged into the ocean, environmental effects must be considered and alternative chemicals investigated if needed. Effluent must meet standards as per the effluent discharge permits.
- Use of reputable and well trained contractors are essential.
**Responsible Body:**
- Proponent
- Tenants
- Contractors

**Data Sources and Monitoring:**
- Namport Operating and System Procedures
- Petroleum Products Act regulations, SANS, MARPOL, National Marine Pollution Contingency Plan, MSDS, and related legislation.
- Conduct monthly sampling and analysis of both industrial effluents released into the ocean (e.g. fish factories) and sewage. This is to ensure compliance to the Model Sewerage and Drainage Regulations or relevant effluent disposal permits issued by the Municipality or Ministry of Agriculture Water Affairs and Forestry. Should compliance be ascertained, the monitoring regime can be adapted to bi-annually. Where non-compliance is found measures should be implemented / enforced to rectify the situation.
- A surface water quality monitoring programme should be implemented to ensure water quality in and around the harbour does not deteriorate and that the habitat in the Walvis Bay Lagoon is protected.
- A report should be compiled bi-annually of all spills or leakages reported and any monitoring results. The report should contain the following information: date and duration of spill, product spilled, volume of spill, remedial action taken, comparison of pre-exposure baseline data (previous pollution conditions survey results if available) with post remediation data (e.g. soil/groundwater hydrocarbon concentrations) and a copy of documentation in which the spill was reported to Ministry of Mines and Energy (where required for hydrocarbon spills).
8.13 **ECOLOGICAL IMPACTS**

Being in an urban environment, ecological impacts from the port would mostly be limited to the marine environment. Impacts include deterioration of water and sediment quality as a result of pollutants, introduction of alien species through ballast water or biofouling on ships’ hulls, mammal strikes by ships, underwater noise and potential habitat loss during additional construction events.

Operation of the port can however impact nearby ecologically sensitive areas such as the lagoon (Ramsar site) and protected areas along the shore. On land, birds flying at night (e.g. flamingos) can get disorientated by bright lighting and this can result in bird strikes with manmade structures.

**Desired Outcome:** To avoid pollution of, and impacts on, the ecological environment.

**Actions:**

**Mitigation:**

- Report any extraordinary fauna sightings to the Ministry of Environment and Tourism and/or Ministry of Fisheries and Marine Resources.
- Mitigation measures related to waste handling, air quality and the prevention of groundwater, surface water and soil contamination should limit ecosystem and biodiversity impacts.
- Ensure waste cannot be blown away by wind.
- The establishment of habitats and of roosting and nesting sites for birds in the port area must be prevented where possible.
- Fish wastes should be managed effectively to discourage scavenging by birds (and other marine animals).
- To prevent bird collisions with structures at night, all lights used at the site should be directed downwards to the working surfaces and only be switched on when and where necessary.
- Namport to enforce ballast water exchanges by ships at required distances from the coast to prevent alien species introduction.
- No hull cleaning of foreign vessels that may contain alien species may take place inside the water in the port, unless measures are in place to prevent waste and live species from entering the environment.
- Regular visual monitoring of coastal areas within port limits, as well as at the lagoon area, should be conducted to ensure no waste originating from port related operations ends up in these environments.

**Responsible Body:**

- Proponent
- Tenants
- Contractors
- Shipping lines

**Data Sources and Monitoring:**

- Namport Operating and System Procedures
- MARPOL, IMO and related legislation
- Ships logs on ballast water exchanges
- A surface water quality monitoring programme should be implemented to ensure water quality in and around the harbour does not deteriorate and that the habitat in the Walvis Bay Lagoon is protected.
- All information and reporting to be included in a bi-annual report.
8.14 **Mariculture and Fishing Industry Impacts**

Deterioration of water and sediment quality as a result of pollutants may impact the mariculture and fishing industry. These include sewage and any other potential waste streams from vessels anchored in the harbour. Many pollutants may through bioaccumulation and/or biomagnification increase in concentration in the flesh of molluscs like mussels and oysters. These include heavy metals like lead and cadmium, which can result in health impacts in consumers of the products, and bans on the export of the mariculture products to international markets. Significant pollution by chemicals may reach mariculture areas and can have detrimental effects resulting in financial losses.

In turn, the mariculture industry may impact on the port by reducing available areas for ship anchoring and navigation.

The fishing harbour is situated downstream of the commercial port: fish processing facilities within the harbour extracts and utilises seawater. Contamination of seawater may therefore render the water unsuitable which may have great financial implications for these facilities.

**Desired Outcome:** To avoid pollution of the marine environment and subsequent impacts on the mariculture and fishing industry.

**Actions**

**Mitigation:**

- Mitigation measures related to waste handling, air quality and the prevention of water contamination should limit marine impacts and thus impacts on the mariculture and fishing industry.
- Installation/Implementation of a warning system for mariculture farms and fish processing facilities to notify them of any spills or pollution events that occurs in port limits.
- Continuous liaison between Namport and the mariculture industry to allow both parties to continue with their relevant activities.

**Responsible Body:**

- Proponent
- Tenants
- Contractors

**Data Sources and Monitoring:**

- Namport Operating and System Procedures
- MARPOL, IMO and related legislation
- A surface water quality monitoring programme should be implemented to ensure water quality in and around the harbour does not deteriorate and that the habitat in the Walvis Bay Lagoon is protected.
- All information and reporting to be included in a bi-annual report.
8.15 **VISUAL IMPACT**
This is an impact that not only affects the aesthetic appearance, but also the integrity of the port and all its infrastructure. This includes all port related infrastructure and properties, such as the truck waiting area along 5th Street, the Syncrolift and the Waterfront.

**Desired Outcome:** To minimise aesthetic impacts associated with the port and all related infrastructure.

**Actions**

**Prevention:**
- Regular waste collection and disposal, good housekeeping and routine maintenance on infrastructure will ensure a low visual impact is maintained.
- Ships at anchor in the port area must be monitored for any illegal dumping of waste that may have a visual impact.

**Mitigation:**
- Routine maintenance on infrastructure and buildings will ensure low visual impact as well as that the longevity of structures are maximised.
- Waste in the port area and on the coastline must be regularly removed.

**Responsible Body:**
- Proponent
- Tenants
- Contractors

**Data Sources and Monitoring:**
- Namport Operating and System Procedures
- A report should be compiled every 6 months of all complaints received and actions taken.
8.16 **IMPACTS ON UTILITIES AND INFRASTRUCTURE**

Any damage caused to existing infrastructure and services like water, telecoms or electricity where present.

**Desired Outcome:** No impact on utilities and infrastructure.

**Actions**

**Prevention:**
- Appointing qualified and reputable contractors is essential.
- Properly documenting all construction activities undertaken in the port through ‘as-built’ drawings and associated documents.
- The contractor must determine exactly where services amenities and pipelines are situated before construction / maintenance commences (utility clearance e.g. ground penetrating radar surveys).
- Liaison with the municipality and suppliers of services is essential.

**Mitigation:**
- Emergency procedures available on file.

**Responsible Body:**
- Proponent
- Tenants
- Contractors

**Data Sources and Monitoring:**
- Namport Operating and System Procedures
- Municipality of Walvis Bay
- Drawings indicating where all linear infrastructure, reticulation, etc. is present throughout the port area.
- A report should be compiled every 6 months of all incidents and actions taken.
8.17 Seabed Scouring and Maintenance of Water Depth
Through sedimentation/siltation the entrance channel and areas adjoining the quay and jetties will become shallower with time. This poses a risk to vessels as it can lead to vessel grounding. Ships with deeper drafts are more at risk.

In addition scouring of the seabed can be caused by vessel propellers. This is typically more pronounced adjacent to quay walls.

**Desired Outcome:** Water depth maintained at safe vessel manoeuvring depths.

**Actions**
**Prevention:**
- Scour protection should be installed where necessary to protect the seabed from scouring and to prevent siltation of adjacent berthing areas.
- Dredging activities must comply with the capital and maintenance dredging EIA and EMPs of Namport.
- Regular water depth inspections / surveys.

**Mitigation:**
- Emergency procedures available on file.
- Regular maintenance dredging to be performed when necessary.

**Responsible Body:**
- Proponent

**Data Sources and Monitoring:**
- Namport Operating and System Procedures
- A report should be compiled of all surveying data and actions taken.
8.18 **IMPACTS ON SERVICES**
Expansion of port operations such as the new container terminal and passenger terminal has the potential to place additional pressure on the supply of potable water and electricity as well as the provision of services by the port and authorities (e.g. public ablution facilities, waste removal, sewage handling and transport infrastructure).

**Desired Outcome:** No water and electricity shortages or interruptions. Regular and efficient supply of services. Road and rail networks suitable to handle traffic generated.

**Actions**

**Prevention:**
- Regular and pre-emptive communication and updates provided to the suppliers of services to ensure they plan for, and upgrade where necessary, for additional pressure expected from port operations.
- Investigating alternative sources, modes of transport, disposal options, etc., should it become necessary (e.g. desalination plants and renewable energy).
- Ensure sufficient supply of facilities for and management of passenger vessels docking and disembarking at the port.

**Mitigation:**
- Water and electricity saving strategies to be employed at all times (even if shortages are not expected).

**Responsible Body:**
- Proponent
- Tenants
- Contractors

**Data Sources and Monitoring:**
- Various national and local master plans and structure plans.
- Maintain a database of water and electricity use, waste production, transport figures, etc. (these will also guide future planning).
- Bi-annual reporting.
8.19 **Vessel Navigation**
Accurate navigation of ships is crucial to prevent accidents and ships running aground. This is especially important at the tanker berths and oil jetty.

**Desired Outcome:** No accidents and damage to vessels and infrastructure.

**Actions**

**Prevention:**
- All navigational aids such as leading lights, lighthouses, buoys, etc. to be in place, maintained and in working order.
- Maintain communication between port control and all seagoing traffic.
- Suitably qualified skippers and crew.
- Installation of a VTS (Vessel Tracking System) or in-situ weather/wave monitoring.

**Mitigation:**
- Emergency procedures available on file.

**Responsible Body:**
- Proponent
- Tenants
- Contractors

**Data Sources and Monitoring:**
- Namport Operating and System Procedures
- IMO Guidelines on Marine Security
- A report should be compiled every 6 months of all incidents and actions taken.
8.20 **Heritage**

Protection of cultural resources falls under the National Heritage Act (Act 27 of 2004) and the National Monuments Act No 28 of 1969 as amended until 1979 - Ministry of Youth, National Service, Sport and Culture. Walvis Bay and its surroundings are regarded as having global archaeological importance due to very well preserved evidence of early contact between indigenous Namibian communities and sea-faring traders. Construction activities may lead to the discovery / accidental destruction of such archaeological or culturally important sites. This includes shipwrecks that may be present within port limits.

Historic buildings and sites may be present in and around the town, any activities in the port and transport activities through town, that is expected to cause significant vibrations in close proximity to these facilities, must be assessed by a specialist prior to onset of the activity.

**Desired Outcome:** Prevent the disturbance of any site or object of national heritage or archaeologically importance.

**Actions**

**Prevention:**
- Appoint reputable contractors.
- If any archaeological or culturally important sites are expected within areas where construction activities will occur, a survey of the site should be performed prior to construction.

**Mitigation:**
- If such a site or any other archaeologically important artefact is found during the development phase any work in that area must be halted and the relevant authorities must be informed.
- If human remains or burial sites are uncovered, the matter has to be immediately reported to the nearest Namibian Police Office. No work may continue at the site until the relevant authority has issued permission to do so. Secondly, the National Monuments Council dealing with heritage should be informed.
- Construction may only continue at that location once permission has been granted.
- For vibration impacts on old buildings a specialist consultant must advise on potential impacts and mitigation measures.

**Responsible Body:**
- PropONENT
- Tenants
- Contractors

**Data Sources and Monitoring:**
- National Heritage Act and National Monuments Act
- Record of any discoveries and proof of notifications to authorities on file.
- Specialist reports
- All information and reporting to be included in a final report
8.21 **Cumulative Impact**

Cumulative impacts are mostly related to the operations of the various port tenants and the fishing industry. As the port is developed, optimized and promoted as a venue for export and import of bulk, break bulk and containerised cargo, impacts can be expected to increase. This includes traffic, noise and possible pollution of the environment. Additional activities in the harbour, such as blasting and ship repair activities, the abstraction of seawater and disposal of effluent, and various small scale dredging activities may lead to the degradation of water quality within the harbour. Also, additional pressure on services provision will realise.

**Desired Outcome:** To minimise cumulative impacts associated with the port and related operations.

**Actions**

**Mitigation:**

- It is recommended that Namport and all industries in the area, utilising seawater and discharging effluent into the ocean, implement a joint monitoring program to ensure the water quality of the harbour does not deteriorate. The same holds for air quality (dust) and noise monitoring where required.
- Regular planning and communication with suppliers of services and updating of master plans are essential.
- Reviewing biannual and annual reports for any new or re-occurring impacts or problems would aid in identifying other cumulative impacts and help in planning if the existing mitigations are insufficient.

**Responsible Body:**

- Proponent
- Tenants
- Contractors
- Fishing industry
- Authorities (Municipality, Roads Authority, NamWater, NamPower, TransNamib, etc.)

**Data Sources and Monitoring:**

- Namport Operating and System Procedures
- Master plans and annual reports
- Monitoring reports
- Annual summary report based on all other impacts must be created to give an overall assessment of the impact of the port and its tenants.
## 9 LEGAL REGISTER

Table 9 presents an overview of the specific legal documents, as discussed in section 5, and their link to the various impacts. It should be noted that the various acts may have regulations and various amendments that must be taken into consideration.

### Table 9. Legal register and applicability to impacts

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10 NAMPORT OPERATING AND SYSTEMS PROCEDURES AND PLANS

Namport has a number of operating and systems procedures as well as emergency response plans. Some of these are relevant to Namport only, while other are relevant to tenants as well. These documents have to undergo periodic review to ensure continued relevance to existing and potential new activities within the port. All tenants should be provided with those documents relevant to them in order to allow them to incorporate the requirements into their own management plans and operating procedures.

The following list of system procedures are Namport specific:

- Aspects Identification and Prioritization
- Control of Documents
- Emergency Preparedness and Response Plan for the Port of Walvis Bay
- Environmental Objectives Targets and Programmes
- External Documents
- Internal and External Communication
- Internal Audits
- Legal and other Requirements
- Management Review
- Marine Accident and Incident Reporting
- Monitoring & Measurements
- Non Conformance, Quality Improvement, Non-conforming Service & Customer Complaint - Investigation and Reporting
- Record keeping
- Training and Development

A list of operating procedures can be found in Table 10.
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11 EXISTING ENVIRONMENTAL ASSESSMENTS AND PLANS

The following existing documentation are relevant to the Port of Walvis Bay and its current and future potential impacts on the environment:

♦ **National Marine Pollution Contingency Plan (2017):** Sets forth and defines Namibia’s oil and hazardous and noxious substances (HNS or chemicals) pollution preparedness and response system. Replaces the National Oil Spill Contingency Plan of 2007. Its purpose is to:
  
  o Set out national policies, principles and arrangements for the management of maritime environmental emergencies including potential and actual oil and chemical pollution in the marine environment.
  
  o It provides for a comprehensive response to all oil and chemical pollution emergencies in the marine environment regardless of how costs might be attributed or ultimately recovered.

♦ **Integrated Urban Spatial Development Framework for Walvis Bay (IUSDF, 2014):** The Integrated Urban Spatial Development Framework for Walvis Bay (IUSDF) has been completed. The overall vision presented by the IUSDF is to transform Walvis Bay from being a combined tourism and semi-industrial port town to being the primary industrial city in Namibia. The IUSDF further sets out the following objectives for the commerce and industrial sector of the town:
  
  o To create and nurture a healthy business environment for the town;
  
  o To facilitate and control the supply of business and industrial land in accordance with market needs;
  
  o To improve the quality and reliability of utility services to the business sector;
  
  o To create opportunities for industrial investment, especially for energy efficient and clean processing and manufacturing activities;
  
  o To integrate informal business areas into the structure, administration, and control of the town;
  
  o To create opportunities for small businesses.

Furthermore the IUSDF aims to ensure that appropriate levels of environmental management is enforced for all developments in Walvis Bay.

♦ **The Integrated Environmental Policy of Walvis Bay (2008):** indicates the directions that the Municipality of Walvis Bay moves towards in order to fulfil its responsibilities to manage the environment of Walvis Bay together with the town’s residents and institutions.

It is a statement of purpose that commits the municipality to certain principles, policy directions, and tools. It serves as an adaptive, flexible framework for a series of sectoral strategies and action plans, these inspired by visions of a better environmental future.

The Policy is directed at assuring Walvis Bay’s environment is properly managed in the long run for the benefit of all its residents and its visitors. The policy has identified various priority areas such as Managing Walvis Bay’s Ramsar Wetland, reducing pollution in the bay, protecting threatened species and improving air quality.

♦ **The Master Plan for Development of an International Logistics Hub for SADC Countries in the Republic of Namibia (NPC 2015):** Aims at developing a logistics hub in Namibia and highlights the Port of Walvis Bay as a key role in this venture. Recognizes the importance of adequate transport infrastructure linking the Port of Walvis Bay to potential markets.

♦ **Strategic Environmental Assessment (SEA) for the coastal areas of the Erongo and Kunene Regions, Namibian Coast Conservation & Management Project – NACOMA (Skov et al. 2011):** It highlight the importance of the coastal areas of the Kunene and Erongo regions, with specific focus on development zones, protected areas and biodiversity. The aim of the SEA is to guide decision making at regional and national levels on “biodiversity conservation, land use
planning, and social and economic development planning in the Kunene and Erongo coastal zones.”

- Rapid Assessment of the Development Plans, Biodiversity Conservation Projects and Socio-Economic Situation of the Namib Coastal Regions (NACOMA 2004): Highlights the importance of tourism and mariculture, as well as protected areas in Walvis Bay and surroundings and acknowledges the potential impacts of increased movement and industrial and infrastructure development on environmentally sensitive areas.

- Strategic Environmental Assessment for the New Port of Walvis Bay SADC Gateway (Botha et al. 2014): The SEA guides decision makers to make informed decisions ensuring that environmental and possibly other sustainability aspects are considered effectively for the expansion of the port through the Port of Walvis Bay SADC Gateway. The SEA looks at the current development scenario of the Port of Walvis Bay and possible constraints, benefits and impacts that might emanate from the planned Port of Walvis Bay SADC Gateway development.

12 IMPLEMENTATION OF THE EMP

This EMP is meant to be an overarching document that encompasses all potential environmental impacts that can potentially originate from any port related activities and provides a general guideline for mitigating the impacts of operations in the port. The EMP must become a contractual obligation that all Namport employees and contractors, as well as tenants and their respective contractors, must adhere to. However, since a port is a dynamic enterprise, which is continuously changing as demands for port related services change, regular updating of the EMP may be required. This will allow for the addition of management actions and strategies that are not currently included in the EMP.

It should be realised that from port management side (Namport), not all impacts with their management actions might be relevant. Similarly not all impacts may be relevant to each of the tenant operations. Therefore, each tenant is responsible for extracting from the overarching EMP, those impacts and management actions relevant to their operations. These should then be elaborated on to be specific to the nature of their own operational activity impacts. Depending on the nature and magnitude of operations of each tenant, respective EMPs will vary in size and complexity. Monitoring of impacts and management actions is essential to allow for future environmental clearance applications and to assess the environmental responsibility of Namport and its tenants.

It is recommended that an environmental committee be established that includes the environmental managers of Namport as well as a representative from each of the tenants of the port and possibly their major contractors. The committee will be responsible for providing feedback on the practicality of implementing the EMP, as well as possible improvements and changes to be considered. Furthermore the committee can investigate a joint, holistic environmental monitoring programme that will ensure long term, scientific environmental monitoring. This will be a proactive approach that will highlight environmental problems originating as a result of the cumulative impacts of port operations in time and allow the development of proactive and sensible mitigation measures.

13 CONCLUSION

The Port of Walvis Bay plays a consequential role in the livelihoods of a significant portion of the town’s population and contributes to revenue generation for the National Treasury. The efficient and effective operations of the Port of Walvis Bay makes it a preferred port of call in southern Africa. It has therefore long been an objective of Namport and related stakeholders to constantly develop and expand the port. The importance of port expansion has been highlighted in various National plans and programmes and is seen as a central part of developing Namibia as a logistics hub in southern Africa. Due to a shortage of available space surrounding the port, alternative locations may be required for future large scale development, which in return may lead to additional environmental impacts. Additional potential constraints relate to ecological sensitivity and limits to water and electricity supply.

The development of an overarching EMP for the Port of Walvis Bay is important in terms of managing the environment in light of existing and potential future operations of the port. It is imperative that all
stakeholders involved in operations within the port has access to and adheres to the conditions as stipulated in the EMP. If properly implemented, this will help to minimise adverse impacts on the environment. Where impacts occur, immediate action must be taken to reduce the escalation of effects associated with these impacts. To ensure the relevance of this document to the specific stage of projects being implemented in the port, it needs to be reviewed and updated throughout all phases.

The Environmental Management Plan should be used as an on-site reference document during all phases of the proposed project, and auditing should take place in order to determine compliance with the EMP. Parties responsible for transgression of the EMP should be held responsible for any rehabilitation that may need to be undertaken. Monitoring reports must be kept available for possible submission with future renewal applications for environmental clearance certificates.

As landowner it is important that Namport keep relevant tenants responsible for pollution clean-ups as the landowner can ultimately be held responsible where such tenants move away. It is important that clean-up goals are agreed on where clean-ups / rehabilitation is needed and that proper monitoring be conducted to ensure clean-up goals are met within reasonable timeframes.
14 REFERENCES


Appendix A: Namport Properties
Appendix B: Public Participation
<table>
<thead>
<tr>
<th>Name</th>
<th>Position/Department</th>
<th>Organisation</th>
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<tr>
<td>Deville Dreyer</td>
<td>Environmental Health Practitioners</td>
<td>Municipality of Walvis Bay</td>
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<td>Berdine Botha</td>
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<td>Johann Essmann</td>
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<td>Bertram Geiger</td>
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<td>Manfred Burth</td>
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<tr>
<td>Eugene de Paauw</td>
<td>Specialist Road Legislation, Advice &amp; Compliance</td>
<td>Roads Authority</td>
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<tr>
<td>Rodney Braby</td>
<td>Regional Technical Adviser</td>
<td>Marine Spatial Management and Governance Project - MARISMA</td>
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<td>NP du Plessis</td>
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<td>Simon Elwen</td>
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<td>Taamba Iithete</td>
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<td>Luwenei Nangombe</td>
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<tr>
<td>Victor Libuku</td>
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<tr>
<td>Anja Kreiner</td>
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<td>Paul van der Merwe</td>
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<td>W.J. Prosser</td>
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<td>CLOF</td>
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<tr>
<td>Martha Uumati</td>
<td>Managing Director and MTA Chair</td>
<td>Erongo Marine Enterprises</td>
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To: The Permanent Secretary  
Ministry of Agriculture, Water & Forestry  
P/Bag 13184  
Windhoek  

Re: Environmental Management Plans for the Operations of the Port of Walvis Bay and Port of Lüderitz

19 October 2018

Dear Sir/Madam

The Namibian Port Authority, Namport, requested Geo Pollution Technologies (Pty) Ltd to prepare environmental management plans for the Ports of Walvis Bay and Lüderitz respectively. The environmental management plans will be prepared according to the Environmental Management Act of 2007 and its regulations as published in 2012.

Project: Drafting of Environmental Management Plans for the Operations of the Port of Walvis Bay and Port of Lüderitz

Proponent: Namibian Port Authority (Namport)

Environmental Assessment Practitioner: Geo Pollution Technologies (Pty) Ltd

All Interested and Affected Parties (I&APs) are invited to register with the environmental consultant to receive further documentation and communication regarding the project. By registering, I&APs will be provided with an opportunity to provide input that will be considered in the drafting of the environmental management plans.

Two information sharing meetings will be held, one in Lüderitz (06 November 2018) and one in Walvis Bay (13 November 2018). Please register as an I&AP and confirm your attendance to the meetings by 02 November 2018. Venue details and related information will be made available to registered I&APs. Reports for review and comment periods will also be communicated to all registered parties.

To register, please complete the attached form and return it to:

Fax: 088-62-6368

E-Mail: namport@thenamib.com

We would also like to request your office, or relevant delegated directorates or departments, to provide us with any legislation, regulations, policies, etc., that may be applicable for the drafting of the port related environmental management plans. Your assistance in this regard will be highly appreciated.

Should you require any additional information please contact Geo Pollution Technologies at telephone 061-257411.

Thank you in advance.

Sincerely,

Geo Pollution Technologies

[Signature]

Andre Faul  
Conservation Ecologist
To: The Permanent Secretary  
Ministry of Health and Social Services  
P/Bag 13198  
Windhoek  
Re: Environmental Management Plans for the Operations of the Port of Walvis Bay and Port of Lüderitz  

Dear Sir/Madam,

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Should you require any additional information please contact Geo Pollution Technologies at telephone 061-257411.

Thank you in advance.

Sincerely,

Geo Pollution Technologies

André Faul  
Conservation Ecologist

[Signature]
To: The Permanent Secretary
Ministry of Safety and Security
P/Bag 13281
Windhoek

Re: Environmental Management Plans for the Operations of the Port of Walvis Bay and Port of Lüderitz

Dear Sir/Madam

The Namibian Port Authority, Namport, requested Geo Pollution Technologies (Pty) Ltd to prepare environmental management plans for the Ports of Walvis Bay and Lüderitz respectively. The environmental management plans will be prepared according to the Environmental Management Act of 2007 and its regulations as published in 2012.

Project: Drafting of Environmental Management Plans for the Operations of the Port of Walvis Bay and Port of Lüderitz

Proponent: Namibian Port Authority (Namport)

Environmental Assessment Practitioner: Geo Pollution Technologies (Pty) Ltd

All Interested and Affected Parties (I&APs) are invited to register with the environmental consultant to receive further documentation and communication regarding the project. By registering, I&APs will be provided with an opportunity to provide input that will be considered in the drafting of the environmental management plans.

Two information sharing meetings will be held, one in Lüderitz (06 November 2018) and one in Walvis Bay (13 November 2018). Please register as an I&AP and confirm your attendance to the meetings by 02 November 2018. Venue details and related information will be made available to registered I&APs. Reports for review and comment periods will also be communicated to all registered parties.

To register, please complete the attached form and return it to:

Fax: 088-62-6368

E-Mail: namport@thenamib.com

We would also like to request your office, or relevant delegated directorates or departments, to provide us with any legislation, regulations, policies, etc., that may be applicable for the drafting of the port related environmental management plans. Your assistance in this regard will be highly appreciated.

Should you require any additional information please contact Geo Pollution Technologies at telephone 061-257411.

Thank you in advance.

Sincerely,

Geo Pollution Technologies

André Faul
Conservation Ecologist
To: The Permanent Secretary
Ministry of Home Affairs & Immigration
P/Bag 13200
Windhoek

Re: Environmental Management Plans for the Operations of the Port of Walvis Bay and Port of Lüderitz

19 October 2018

Dear Sir/Madam,

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André Faul
Conservation Ecologist

Directors: P. Bohm (B.Sc. Hon. Hydrogeology) (Managing)
To: The Permanent Secretary
Ministry of Fisheries and Marine Resources
P/Bag 13355
Windhoek

Re: Environmental Management Plans for the Operations of the Port of Walvis Bay and Port of Lüderitz

19 October 2018

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Thank you in advance.

Sincerely,

Geo Pollution Technologies

[Signature]

André Paul
Conservation Ecologist

Directors: P. Botha (B.Sc. Hons. Hydrogeology) (Managing)
To: The Permanent Secretary  
Ministry of Environment and Tourism  
P/Bag 13306  
Windhoek  

Re: Environmental Management Plans for the Operations of the Port of Walvis Bay and Port of Lüderitz  

19 October 2018

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Proponent: Namibian Port Authority (Namport)

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Sincerely,

Geo Pollution Technologies

[Signature]

André Faul  
Conservation Ecologist

Port of Walvis Bay - EMP - Oct 2019  
Geo Pollution Technologies (Pty) Ltd
To: The Permanent Secretary  
Ministry of Works and Transport  
P/Bag 13341  
Windhoek  

Re: Environmental Management Plans for the Operations of the Port of Walvis Bay and Port of Lüderitz

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Geo Pollution Technologies

André Faul  
Conservation Ecologist

Directors:

OFFICE OF THE PERMANENT SECRETARY

P. Botha (B.Sc. Hons. Hydrogeology) (Managing)
To: The Permanent Secretary  
Ministry of Mines and Energy  
P/Bag 13297  
Windhoek

Re: Environmental Management Plans for the Operations of the Port of Walvis Bay and Port of Lüderitz

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[Signature]

André Faul  
Conservation Ecologist

Directors:  
P. Betha (B.Sc. Hons. Hydrogeology) (Managing)
To: The Permanent Secretary  
Ministry of Defence  
P/Bag 13307  
Windhoek  

Re: Environmental Management Plans for the Operations of the Port of Walvis Bay and Port of Lüderitz  

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Thank you in advance.

Sincerely,

Geo Pollution Technologies

[Signature]

André Faul
Conservation Ecologist

Directors:

P. Botha (B.Sc. Hons. Hydrogeology) (Managing)
PUBLIC PARTICIPATION NOTICE
ENVIRONMENTAL MANAGEMENT PLANS FOR THE OPERATIONS OF THE PORT OF
WALVIS BAY AND PORT OF LUKUANGO

The Namibian National Authority, Namport, with assistance from the Namibian National Environmental Protection Agency, Namibia (NNEPA), is in the process of preparing an Environmental Management Plan (EMP) for the operations of the Port of Walvis Bay and Port of Lukango. The EMP will be prepared as required by the Environmental Management Act of 1998. The EMP will be a legal instrument that will provide guidelines for the operation of the ports.

A public participation notice is issued in terms of the Environmental Management Act of 1998, as amended. The public is hereby invited to submit comments and views on the EMP. Comments and views must be submitted in writing to the following address:

Geo Pollution Technologies (Pty) Ltd
P.O. Box 15724
Walvis Bay, Namibia

Comments and views must be submitted by 30 November 2019.

For further information, contact:

Annette Pillay

Tel: +264 44 511303

E-mail: annette.pillay@geo-rec.com

PUBLIC PARTICIPATION NOTICE
ENVIRONMENTAL MANAGEMENT PLANS FOR THE OPERATIONS OF THE PORT OF
WALVIS BAY AND PORT OF LUKUANGO

THE NAMIBIAN
NATIONAL NEWS
MONDAY 22 OCTOBER 2018

VACANCY

Go-getters and passionate individuals are invited to join the National Oil Company. Make your unique contribution towards our cause of fueling and exploring Namibia.

Department: Commercial Business Unit
Position: Business Analyst B-Lower

Please apply online at: http://www.namcor.com.na/

Women and Persons with disabilities are highly encouraged to apply

Enquiries: Senior HR Business Partner @ 061-204/5146

Closing date for applications: 26 October 2018

For further information, contact:

Gile Coetzer
Senior HR Business Partner
Namcor
Tel: 061-204/5146

Geo Pollution Technologies (Pty) Ltd
Appendix C: Attendance and Minutes of Public and Tenants Meeting
**Minutes of Meeting**

**Re:** Public Meeting: Drafting of an Environmental Management Plan for the Port of Walvis Bay

**Date:** Tuesday, 13 November 2018

**Time:** 14h30-16h00

**Venue:** Mission to Seafarers Boardroom, Walvis Bay

**In attendance:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melody Lilungwe</td>
<td>Albatross Task Force - Namibia Nature Foundation</td>
</tr>
<tr>
<td>Samantha Matjila</td>
<td>Namibia Nature Foundation</td>
</tr>
<tr>
<td>Titus Shaanika</td>
<td>Namibia Nature Foundation</td>
</tr>
<tr>
<td>Saban S.</td>
<td>Namibia Ports Authority</td>
</tr>
<tr>
<td>Tim Einman</td>
<td>Namport</td>
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<tr>
<td>M. Kanime</td>
<td>EBHN</td>
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<tr>
<td>Nangula Amatsi</td>
<td>Municipality of Walvis Bay</td>
</tr>
<tr>
<td>Magreth Kachuka</td>
<td>Municipality of Walvis Bay</td>
</tr>
<tr>
<td>Clarence Beukes</td>
<td>Nampol</td>
</tr>
<tr>
<td>Migal Kambatuku</td>
<td>Nampol</td>
</tr>
<tr>
<td>Bertram Geiger</td>
<td>Roads Authority</td>
</tr>
<tr>
<td>Ferdinand Hamukwaya</td>
<td>Ministry of Fisheries and Marine Resources</td>
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<tr>
<td>Anja Kreiner</td>
<td>Ministry of Fisheries and Marine Resources</td>
</tr>
<tr>
<td>Izak de Wit</td>
<td>Walvisbay Bulk Terminal</td>
</tr>
<tr>
<td>Luwewel Nangombe</td>
<td>Toovus Century Investment</td>
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<tr>
<td>Deville Dreyer</td>
<td>Municipality of Walvis Bay</td>
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<tr>
<td>W. Williams</td>
<td>EBHN</td>
</tr>
<tr>
<td>Tari van der Merwe</td>
<td>WB Diving</td>
</tr>
<tr>
<td>Paul van der Merwe</td>
<td>WB Diving / home owner</td>
</tr>
<tr>
<td>Tashiya Tuyenikelao</td>
<td>Nampol Port</td>
</tr>
<tr>
<td>Joyce Mukumbi</td>
<td>Namport</td>
</tr>
<tr>
<td>S.N. Kalulu</td>
<td>Namport</td>
</tr>
<tr>
<td>J. Kezumo</td>
<td>Namibian Navy</td>
</tr>
<tr>
<td>Henok Shikongo</td>
<td>Municipality of Walvis Bay</td>
</tr>
<tr>
<td>Stefanus Gariseb</td>
<td>Namport</td>
</tr>
<tr>
<td>Phillip Coetzee</td>
<td>WFS Manica Group</td>
</tr>
<tr>
<td>Maria Amunyela</td>
<td>Marsima - GIZ</td>
</tr>
<tr>
<td>Rod Braby</td>
<td>Marsima - GIZ</td>
</tr>
<tr>
<td>J. Ferreira</td>
<td>WBBT</td>
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<tr>
<td>Capt. Nik Magadhi</td>
<td>SSA</td>
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<tr>
<td>André Burger</td>
<td>Municipality of Walvis Bay / Resident</td>
</tr>
<tr>
<td>Fennie Kalimbo</td>
<td>Nampol</td>
</tr>
<tr>
<td>David Uushona</td>
<td>Municipality of Walvis Bay</td>
</tr>
<tr>
<td>Monique Laubscher</td>
<td>Namibia Dolphin Project</td>
</tr>
<tr>
<td>Shelley Mulenamaswe</td>
<td>Namport</td>
</tr>
<tr>
<td>Ismet Kara</td>
<td>Africa Union Cargo</td>
</tr>
<tr>
<td>Cecil Kamupingene</td>
<td>Namport</td>
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</tbody>
</table>
André Faul of Geo Pollution Technologies welcomed the audience to the meeting and proceeded with a presentation to introduce the different parties involved and to explain the purpose of the environmental management plan (EMP) and the meeting. After the presentation the audience was invited to provide input to be considered in the drafting of the EMP.

Mr. Bertram Geiger enquired about the area of influence of the port of Walvis Bay. André explained that the area of influence of the port operations will only be offshore, up to around Patrysberg (around 20 km’s from the town centre).

Mr. Titus Shaanika enquired how oil spills will be dealt with, particularly offshore. André explained that Namibia has a National Marine Pollution Contingency Plan (2017) which deals with oil pollution and which Namport follows. He mentioned that this subject will also be considered and mentioned in the EMP. He then explained that the purpose of the EMP is not to be specific on detailed mitigation and preventative measures (this remains the responsibility of the proponent to develop detailed plans), but only to provide guidelines and limits the proponent must adhere to and operate within. He elaborated that pollution remains an obstacle in Namibia due to the lack of guidelines and regulations within the national Acts. The constitution of Namibia therefor allows for international law to become legal in Namibia, where laws, guidelines of regulations are lacking within the Namibia law.

Ms. Anja Kreiner raised a concern about the spatial closeness of the dedicated anchorage areas to the dedicated aquaculture areas, and what impacts this may have with regards to the possibility of sewage (and Escherichia coli) from the ships impacting on aquaculture. André recognised the concern and mentioned that it is something that need to be considered, and that the documents related to mariculture guidelines and management will be reviewed for consideration of the matter in the EMP. He further mentioned that members from Walvis Bay mariculture and the Directorate of Aquaculture has been invited to join the meeting, however, no members are present. He explained that it is possible that some email invites may not have reached their destination due to server problems the consultants have experienced recently, and therefore requested the audience to inform potential interested and affected parties that did not receive an invite to contact him if they would like to be involved in the EMP. He further apologised about the problems they are experiencing.

Ms. Monique Laubscher mentioned that the new tanker berth is located in the northern part of an area frequented by marine mammals, specifically bottlenose dolphins. It is therefore habitat that is now lost. She further mentioned that monitoring and research done by the Namibian Dolphin Project indicated that the behaviour and preferred areas of dolphins have changed due to the impacts of the harbour. A reference was made to a section in the draft EMP of the Tanker Berth, where a biodiversity offset was proposed to compensate for habitat that will be lost due to the development. She mentioned that the area north of the bird island has become a voluntary no go zone area, which tourist vessels avoid. The Namibian Dolphin Project team has recommended this as the biodiversity offset zone, which should be increased to a 1000 m offshore zone along the Long Beach. She asked whether this is something that can be taken into account for the EMP. André said that it is something that can be discussed with Namport and noted that it will only be offshore with no onshore restrictions. Mr. Stefanus Gariseb agreed that it is something that can be considered and discussed.

Mr. Rod Braby asked who ultimately takes responsibility for the water quality and distribution of quality regulations in the Namport area (harbour), as there are various institutions involved in this subject. André acknowledged this as a concern, and explained that ultimately it should be the Directorate of Water Affairs as they are the authority issuing permits for seawater abstraction as well as effluent discharge. However, the various users such as Namport and the tenants carry the responsibility to conduct monitoring and ensure compliance. He further explained, that in his opinion, the best solution would be a holistic approach to monitoring, involving all users, where monitoring is conducted on a larger scale to give sound scientific data. He mentioned that this will also be further discussed with Namport. Mr. Braby then agreed that water quality is the responsibility of the Ministry of Agriculture, Water and Forestry, but no-one enforces and really takes responsibility, and provides specifics on water quality regulations for different areas.
Mr. André Burger mentioned a list of topics that the Municipality of Walvis Bay deems important to be addressed in the EMP. The list included the following:

- **Noise**: He mentioned noise emanating from the container terminal during the night.
- **Air quality**: Such as dust originating from the manganese heaps.
- **Damage to roads**: Such as the damage caused by trucks originating from the salt works and the port. He mentioned that some sort of arrangement needs to be made with the municipality with regards to upkeep of the roads.
- **Trucks**: And the amount thereof in town. He mentioned the need for truck port should be addressed, and asked who will be responsible for this. E.g. such as a joint operation from Namport, Walvis Bay Corridor Group and the Municipality.
- **The increase in passenger liners**: And how Namport will manage this in the port, as well as at the gate. Including dealing with informal traders and ablution facilities for the passengers disembarking.
- **General pollution from vessels within port limits**: Such as litter and plastics.
- **Protection of the lagoon**: As a Ramsar site. What is Namport’s responsibility in ensuring that the lagoon is protected and monitoring is conducted?

Mr. Deville Dreyer added to Mr. Burger’s comments and mentioned that air pollution from the Syncrolift area, as well as safety risks due to an increase of informal traders is a concern. He also mentioned the issue of noise pollution along 5th Street, emanating from the Botswana Dry Port, and how this is impacting residents, and was wondering why a noise barrier has not been erected there. André thanked them for the input and stated that these comments and concerns will be considered during the compilation of the draft EMP. He further mentioned that the consultants are aware of the current problems at the Botswana dry port, and that they are in the process of working on solutions for the noise problems. André proceeded by addressing the comment on the degradation of the roads, and noted that it is difficult to assign responsibility to a specific organisation, and that it is something that needs to be discussed between the different parties.

Mr. Stefanus Gariseb acknowledged the issues, and noted that they are all issues that Namport are aware of, and currently working on solutions for. He proceeded by pointing out that Namport and Unam have signed a memorandum of understanding to monitor the lagoon and the ecosystem thereof. This has been ongoing for the last three years, in order to identify and understand any changes in the lagoon. The recommendations coming from the results of the monitoring will then form part of the management plan. He pointed out that the lagoon is a National asset, where various stakeholders are responsible, and that the other parties should also become involved to cooperate in addressing these issues.

Mr. Betram Geiger noted that the road to the salt factory is a district road that is maintained by Roads Authority, along with the roads leading out of Walvis Bay. He requested that Roads Authority be involved in meetings related to road maintenance in town, and also that they be notified of the entrances and exits from the port that will be used. André acknowledged the request. Mr. Gariseb mentioned that there is an EMP that was done for the new main gate as well, which will be considered in this EMP.

Ms. Maria Amunyela mentioned that there are sensitive marine (ecological and biological) area running through the Namport area of jurisdiction. André requested that the information be sent to him.

Ms. Nangula Amatsi wanted to know if there will be another meeting where the draft EMP will be presented to them once finalised. André stated that another meeting has not been planned, however, if the need arises, based on the comments received on the draft EMP etc., it can be discussed with Namport. He noted that the draft report will be sent out to all registered parties where a week or two will be given to all parties to review the report and provide comments. If the registered parties still feel that there is a need for a meeting, further arrangements can be communicated. Two other
members from the Municipality of Walvis Bay expressed the need for such a meeting, including Mr. David Uushona.

Mr. Martin Kanime noted that monitoring results on sediments and mussels within the harbour varies constantly, and expressed the need for an joint venture between responsible parties (holistic monitoring program), and that specific monitoring and quality regulations be determined as there is a lack of specific standards and limits for seawater quality, mussels and sediment. Ms. Kreiner made reference to the BCLME document, wherein certain standards were proposed.

Mr. Paul van der Merwe pointed out that noise emanating from the port area, and specifically the Botswana dry port have been causing nuisance for residents along 5th Street, and that attempts have been made to cooperate with the manager of the dry port, which have been disregarded. He wanted to know where complaints regarding this can be directed to. André said that the matter will be discussed with Namport.

Mr. David Uushona seconded the need for second a meeting discussing the findings of the draft EMP. He proceeded by pointing out the importance of looking at, and addressing the cumulative impacts such as noise and providing standards for different areas. He also pointed out that it is important to involve the Namport Staff, as interested and affected parties. André mentioned that the consultants will look at having a feedback meeting.

Mr. Rod Braby mentioned that Namport has increased their area of jurisdiction to Caution Reef (Partry Berg) which forms part of the Dorob National Park, and is an extremely sensitive important bird area, and is classified as an IUCN category 1A nature conservation area. He mentioned that this, as well as climate change, needs to be taken into consideration during the drafting of the EMP. He also raised a concern on the amount of litter washing up on the shores, indicating that ships aren’t monitored for littering. He further elaborated on potential impacts that climate change may have, and mentioned that any development on pelican point may have an impact on the safety of the harbour, and asked whether this will be considered. André said that it will be discussed with Namport, he further stated that it remains difficult to monitor pollution from ships within the harbour.

Mr. Betram Geiger made reference to abnormal vehicles being on the roads, due to large / heavy cargo being imported through the port, and wanted to know whether Namport will be able to contribute towards upgrades of the nearby road infrastructure. André stated that it is a matter which Namport only can discuss, the consultants will however consider it during the drafting of the EMP.

Ms. Tari van der Merwe once again raised the issue of litter washing ashore along the Long Beach area, and wanted to know who is responsible for the beaches, from the new tanker berth up to Patrysberg. Mr. Gariseb mentioned that up to the high-water mark falls under Namports area of Jurisdiction. André mentioned that areas forming part of the Dorob National park falls under the jurisdiction of the Ministry of Environment and Tourism, and the remaining areas above the high-water mark is municipal land. Ms. van der Merwe suggested the responsible parties either charge a fee to utilise the beaches which then goes towards cleaning the beaches or erect more waste bins. André mentioned that this is a general problem, and the ports responsibility towards waste management will be discussed with them. Mr. van der Merwe suggested that Namport arrange with the tourist boats to monitor illegal dumping from vessels in the port.

No further comments were received and the meeting was adjourned.
Minutes of Meeting
Re: Tennant Meeting: Drafting of an Environmental Management Plan for the Port of Walvis Bay
Date: Tuesday, 13 November 2018
Time: 09:00-13:00
Venue: Mission to Seafarers Chapel, Walvis Bay

In attendance:

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
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<tbody>
<tr>
<td>R. Wolters</td>
<td>Confederation of Namibian Fishing Association</td>
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<tr>
<td>A. Vilbert</td>
<td>Transworld Cargo Namibia (Pty) Ltd</td>
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<td>M. Orffer</td>
<td>Transworld Cargo Namibia (Pty) Ltd</td>
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<tr>
<td>J. Ferreira</td>
<td>Walvis Bay Bulk Terminal (Pty) Ltd</td>
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<tr>
<td>J. Joubert</td>
<td>Kraatz Marine (Pty) Ltd</td>
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<tr>
<td>Kobie Potgieter</td>
<td>Kraatz Marine (Pty) Ltd</td>
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<tr>
<td>R. vd Westhuizen</td>
<td>Marine Industrial Coatings</td>
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<tr>
<td>Bernette Louw</td>
<td>Namib Marine Services (Pty) Ltd</td>
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<tr>
<td>Gordon Joubert</td>
<td>Benguella Sea Products (Pty) Ltd</td>
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<tr>
<td>R. Steinmetz</td>
<td>Hydroweld CC</td>
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<td>B. Schweickhardt</td>
<td>Commercial Cold Storage (Pty) Ltd</td>
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<td>C. Rabald</td>
<td>Rossing Uranium</td>
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<td>Moltan Traclacu</td>
<td>Africa Union Cargo (Pty) Ltd</td>
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<td>Riaan Lottering</td>
<td>Etosha Fishing</td>
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<td>Izak de Wit</td>
<td>Walvis Bay Bulk Terminal (Pty) Ltd</td>
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<tr>
<td>Andries Olivier</td>
<td>Benguella Sea Products (Pty) Ltd</td>
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<tr>
<td>Eugene Mouton</td>
<td>Rossing Uranium</td>
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<tr>
<td>Pilar Veiga</td>
<td>SPANAM Shipping Services CC</td>
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André Faul of Geo Pollution Technologies welcomed the audience to the meeting and proceeded with a presentation to introduce the different parties involved and to explain the purpose of the environmental management plan (EMP) and the meeting. After the presentation the audience was invited to provide input to be considered in the drafting of the EMP.

Ms. Bernette Louw enquired about the problem of environmental pollution in the form of plastic. She said that the major source of plastic pollution is from the packaging of goods that is handled in port (cling wrap plastics). The plastic is stored unconventionally and gets blown into the ocean and around the Namport harbour area, especially with the windy conditions around Walvis Bay. Where she works they try their best to clean up plastic, but she said that cleaning should be done by all parties. Namport should become stricter in implementing measures to prevent plastic pollution. André explained that waste management will form a big part of the EMP. He stated that plastic pollution is considered serious as it poses a threat to sea animals. He said that the Namport EMP will propose mitigation measures that tenants must adhere to in terms of plastic handling and disposal.

Ms. Louw added to the above, stating that it is not just about policing to solve the plastic problem, but also a matter of knowledge. She said that people involved in Namport must be made aware about the environmental risks involved with improperly disposed plastics, especially when it is broken down and becomes more harmful to the environment. It can be done by doing simple presentations to them about the various stages of plastic decomposition and discussions on how dangerous it is for the environment. Ms. Louw suggests that there should be an educational component with the policing in the EMP. André noted this suggestion.

Mr. Robert Steinmetz stated that grit blasting and spray painting are problematic in the port due to overspray and windblown dust and grit. Consulted with Namport for a solution has this far not been
successful. André recognised the concern and said GPT is also involved with EBH and the floating docks. He said it is an industrial port and the need for such services are important, but it is difficult to manage or mitigate the problem. He further noted that EBH has a monitoring programme in place, but he would like to see a holistic monitoring programme for the whole port due to the many potential polluters in the port. The monitoring should include monitoring for visible substances (grit blasting) and also for those not visible (released effluents). He stressed that the polluters of visible substances get accused and the non-visible polluters get away with it.

Mr. Kobie Potgieter stressed the impact [grit dust and overspray] of ship repair activities. He suggested a separate forum to discuss the issues in the commercial harbour, with more stakeholders involved, where all can work towards suggestions and solutions. André explained that the EMP will not provide detailed mitigation measures which Namport need to adhere to, but rather provide limits within which Namport needs to operate. The limits will be determined from national or international standards. Then it will be the clients’/tenants’/Namport’s responsibility to apply detailed mitigation measures to ensure they operate within the limits. The EMP will include a forum where solutions to problems can be discussed.

Ms. Louw asked how grit impacts the environment. André responded saying copper slag is usually used for grit blasting, and depending where it comes from, may contain harmful elements like arsenic. This is for example the case for copper slag originating from the smelter at Tsumeb. If the harmful elements are available in the natural environment, it can be taken up by organisms like fish and contaminate them. Ms. Louw agreed that it would be important to do a study to see whether there are any impacts on the marine life. André further explained that dust from older vessels containing harmful paints (tributyltin based-, lead based paint) may be problematic for marine life, disrupting the reproductive systems. The newer paints are not allowed to contain such harmful substances. He also mentioned that there are some mitigation measures in place, however it remains a difficult to manage due to practical reasons.

Mr. Potgieter noted that the visual impact of the blasting on the neighbours is more an issue than the natural environment. Ms. Louw said she doesn’t think that the environmental side should be left out. André agreed on the comments. Mr. Steinmetz noted that previously sand was used for blasting, but then it was switched to grit. He said sand is dangerous to use. André agreed and said sand contains silicate minerals and can cause silicosis, a disease of the lungs. André mentioned that blasting companies may consider alternative methods of blasting, but this may not be financially feasible. Mr. Potgieter further said that, even with other methods, the dust will not be 100% contained, there will always be some dust escaping. André agreed on the comments.

Mr. Curt Rabald elaborated about harmful substances originating from sand and grit blasting, and from offloading and loading of manganese, which contaminate the salt storage area. He said that salt gets loaded to vessels showing visual signs of contamination on a daily basis. André noted the concern and said that the EMP will look into the bulk terminal where the manganese, coal and salt is stored. The consultants will also engage with the companies involved with the storage of the salt at the bulk terminal, as they occupy a large part of the bulk terminal.

Mr. Johnny Ferreira inquired about dust monitoring standards and limits within Namibia. André responded that Namibian guidelines for dust levels is not yet stated (no laws for dust levels), but the Namibian constitution allow for international law to be used where Namibian regulations are lacking. Namibia also fall back on World Health Organization Levels, which are considered well known and acknowledged levels. He further stated that the Department of Water Affairs have their own set of standards for quality of effluent discharge in the harbour, to which the fish factories have to adhere to, and that various standards will be considered for inclusion in the EMP. Mr. Ferreira noted that there are industrial and residential limits for dust fallout within South African regulations. The EMP must consider these to accommodate all tenants in the bulk terminal/Namport area. As the area is an industrial area, the limits must be fair for the tenants. André agrees with his comment and adds that the the Walvis Bay’s Integrated Urban Spatial Development Framework earmarks Walvis Bay
primarily as an industrial town. However, the Namibian health laws does say you should not be a
nuisance to your neighbours, so one has to find a balanced solution.

Mr. Joshua Joubert said that certain mitigation regulations that were given to Syncrolift users by
Namport are not practical and feasible and will lead to loss of vessel repair work, which will have a
financial impact on the town. He mentioned that consultation with the users is important to work
towards a plan that is suitable for everyone, and with a common goal. Ms. Bernette added that all the
tenants of the Syncrolift pays fees to Namport for its use. Therefore, Namport should also invest money
into the facility. André noted the comments, and explained that if an environmental clearance
certificate is issued to Namport, based on this EMP, the EMP becomes a legally binding document.
Namport will therefore have to adhere to the regulations set forth in the EMP.

André requested that any documents such as handling of hazardous materials or management plans,
which can be consulted for consideration in the EMP, be provided to GPT.

Ms. Pilar Veiga inquired how GPT is going to address all the environmental problems in the report.
André replied that it will be a holistic study that will for example include a section on noise, providing
guidelines which everyone in the Namport area must adhere to. Other impacts will also be covered in
the same way. Ms. Veiga asked how all the impacts (syncrolift, plastic, fishing, acid, new
developments) can be handled in a holistic manner. André responded that all new developments will
be taken into account, and that the EMP has to be written in such a way that future additions to the
port will be covered. The fishing industry is however excluded from the EMP. Ms. Louw inquired why
the fishing companies is left out. André replied they have their own EIA and EMP studies, but from
GPT’s perspective, the fishing industry will be considered, even though they would not explicitly form
part of the EMP. He also said GPT is in a good position, because we have done most of the EIA’s and
EMP’s for the fishing companies in the fishing harbour, thus having good insights what the limits is
for effluent discharges and other listed activities. Impacts on fishing companies will be in the form of
effluent discharged from the bulk terminal that can contaminate the intake waters used by the fish
factories. Mr. Potgieter added that if effluents are mentioned, then the entire port area have to be taken
in consideration, not just a particular factory. André replied Namport will not prescribe their EMP to
the fishing industry, thus GPT will consider the fishing industry, and therefore mitigation measures in
the EMP will be written in such way to protect the fishing industry.

Ms. Veiga inquired how the EMP will assess the water quality of the port with the ongoing effluent
disposal and whether the EMP will only stick to the commercial harbor area. André replied that the
water quality of the whole port area have to be addressed. He also said GPT has a monitoring proposal
that is yet to be presented to Namport and stakeholders. Currently there are localised businesses that
do effluent and sediment sampling (e.g. EBH and some fishing factories). These are however isolated
from one-another and one cannot get the bigger picture. If everybody works together to support one
monitoring programme it can become much cheaper with better results.

Mr. Ferreira inquired whether the EMP would cover the whole port limits as indicated in the slides, or
only the commercial harbour, on which most of the discussions were. He asked if the fishing harbour
area will also be included? André replied that the whole port area will be considered, but the fishing
factories fall on municipal land and jetty construction and jetty operations fall under Namport
jurisdiction, and that is why the EMP will not focus primarily on the fishing factories. In terms of the
whole port area, everything that falls offshore will be included in the EMP. Only the dredging will be
excluded due to its own EIA and EMP. Mr. Joubert inquired whether the fishing companies that do
their own repairs at their quay sides will be included in the EMP. André said that he will speak to
Namport about offshore part of fishing factories and its applicability to the EMP. Ms. Bernette said
that she would expect that any operation that influence the ocean, even those occurring on land, should
be included in the overall management plan. Mr. Joubert asked what will stop dumping of substances
and effluents in the areas that the EMP do not cover. André again said that he will speak to Namport
about this issue since Namport is ultimately responsible for the water quality within the port limits.
Mr. Ferreira added that some tenants cause elevated dust levels and asked what the limits will be for dust monitoring. He further asked if different limits will be utilised for different tenants? André said that he could not answer it now due to it being the beginning stages of the EMP. He also said at this stage different dust sources and receptors are identified and what concentrations and type of dust is created. Mr. Ferreira stated that when the EMP becomes a legal document, the stipulated limits for dust should be fair towards the tenants. André agrees and said if Namport have an overarching EMP with a clearance certificate, then technically all the tenants in the port do not need their own ECC, however government may differ from that opinion. Each tenant may be required to conduct their own minor environmental impact assessment according to their respective activities. The EMP for the activities of tenants will then fit in with the bigger Namport EMP. It can happen that the conditions prescribed at facilities may differ from that of other facilities, and things like operational limits may need to be adjusted.

Ms. Veiga inquired whether a draft document will be available for viewing. André said yes, he will first send it to Namport, they will go through it, if they approve it, it will be made available to all stakeholders (public, tenants, registered parties). They will be given a week to review and provide comments, then this information will be used to prepare the final document, which is then again shared with all the stakeholders.

Mr. Ron Wolters said that to abstract water from the sea one must get permission from the Department of Water Affairs and follow their standards of effluent discharge quality. He said that Namport is not involved with the standards of effluent discharge set out by the Department of Water Affairs.

No further comments were received and the meeting was adjourned.
Appendix D: Consultants’ Curriculum Vitae
Hydrogeologist

Pierre Botha

Pierre Botha is the Managing Director of Geo Pollution Technologies, Namibia. Mr. Botha has excellent experience and knowledge in Environmental Impact Assessments, groundwater pollution assessment, groundwater exploration, resource evaluation, urban and rural water supply, groundwater management, monitoring and hydrochemistry. He gained most of his experience in Namibia and is involved in the Namibian groundwater industry since 1992.

Mr Botha's experience in the environmental / groundwater field has been gained from various projects ranging from groundwater exploration, groundwater management and modelling, environmental impact assessments, pollution mapping and rehabilitation to health risk evaluations.

CURRICULUM VITAE PIERRE BOTHA

Name of Firm: Geo Pollution Technologies (Pty) Ltd.
Name of Staff: PIERRE BOTHA
Profession: Hydrogeologist / Hydrologist
Environmental Assessment Practitioner
Years' Experience: 27
Nationality: Namibian
Position: Managing Director
Specialisation: Hydrogeology
Languages: Afrikaans – speaking, reading, writing – excellent
English – speaking, reading, writing – excellent

EDUCATION AND PROFESSIONAL STATUS:
B.Sc. Geology & Geography: University of OFS, 1992
B.Sc. (Hons.) (cum laude) Geohydrology/Hydrology: University of OFS, 1994
First Aid Class A: EMTSS, 2017
Basic Fire Fighting: EMTSS, 2017

PROFESSIONAL SOCIETY AFFILIATION:
Environmental Assessment Professionals of Namibia (EAPAN) – President 2014 - Vice President 2012, 2013
Hydrogeological Association of Namibia (HAN)
Geological Association of Namibia

AREAS OF EXPERTISE:
Knowledge and expertise in:
- risk-based corrective action analyses
- bioremediation
- monitoring, mapping and evaluation of groundwater pollution
- hydrochemistry studies
- environmental impact assessments
- project management
- soil vapour surveys
- groundwater modelling
- groundwater monitoring
- hydrocensus
- hydrogeological data evaluation and interpretation
- groundwater exploration and resource evaluation
- geophysical interpretations (Ground Penetrating Radar, Electrical Resistivity, Electromagnetic & Magnetic)
- urban and rural water supply
- groundwater management
- borehole siting, drilling and test pumping supervision, aquifer testing

EMPLOYMENT:
1998 - Date: Geo Pollution Technologies (Pty) Ltd
1995: Parkman Namibia (Groundwater Consulting Services) - Hydrogeologist
1994: Institute for Groundwater Studies, University of the Orange Free State - Hydrogeologist
1992 - 1993: Groundwater Consulting Services - Field Geologist
1988: Tsumeb Corporation Ltd - Student geologist

PUBLICATIONS:
Contract reports: +400
Publications: 1
ENVIRONMENTAL SCIENTIST

André Faul

André entered the environmental assessment profession at the beginning of 2013 and since then has worked on more than 70 Environmental Impact Assessments including assessments of the petroleum industry, harbour expansions, irrigation schemes, township establishment and power generation and transmission. André’s post graduate studies focussed on zoological and ecological sciences and he holds a M.Sc. in Conservation Ecology and a Ph.D. in Medical Bioscience. His expertise is in ecotoxicological related studies focussing specifically on endocrine disrupting chemicals. His Ph.D. thesis title was The Assessment of Namibian Water Resources for Endocrine Disruptors. Before joining the environmental assessment profession he worked for 12 years in the Environmental Section of the Department of Biological Sciences at the University of Namibia, first as laboratory technician and then as lecturer in biological and ecological sciences.

CURRICULUM VITAE ANDRÉ FAUL

Name of Firm : Geo Pollution Technologies (Pty) Ltd.
Name of Staff : ANDRÉ FAUL
Profession : Environmental Scientist
Years’ Experience : 18
Nationality : Namibian
Position : Environmental Scientist
Specialisation : Environmental Toxicology
Languages : Afrikaans – speaking, reading, writing – excellent
            English – speaking, reading, writing – excellent

EDUCATION AND PROFESSIONAL STATUS:
B.Sc. Zoology : University of Stellenbosch, 1999
B.Sc. (Hons.) Zoology : University of Stellenbosch, 2000
M.Sc. (Conservation Ecology) : University of Stellenbosch, 2005
Ph.D. (Medical Bioscience) : University of the Western Cape, 2018

First Aid Class A EMSS, 2017
Basic Fire Fighting EMSS, 2017

PROFESSIONAL SOCIETY AFFILIATION:
Environmental Assessment Professionals of Namibia (Learner Practitioner)

AREAS OF EXPERTISE:
Knowledge and expertise in:
* Water Sampling, Extractions and Analysis
* Biomonitoring and Bioassays
* Biodiversity Assessment
* Toxicology
* Restoration Ecology

EMPLOYMENT:
2013-Date : Geo Pollution Technologies – Environmental Scientist
2005-2012 : Lecturer, University of Namibia
2001-2004 : Laboratory Technician, University of Namibia

PUBLICATIONS:
Publications: 5 + 1 in preparation
Contract Reports : +80
Research Reports & Manuals: 5
Conference Presentations: 1
ENVIRONMENTAL GEOLOGIST

Wikus Coetzer

Wikus has 4 years’ experience in environmental science related fields with 1 year experience in conducting environmental impact assessments and preparation of environmental management plans. He holds an honours degree in Environmental Sciences – Environmental Geology from the Northwest-University Potchefstroom (NWU) South Africa. He first completed a B.Sc. degree in Geology and Botany in the required time also from the Northwest University Potchefstroom, South Africa. His honours project focused on the rehabilitation and phytoremediation of various tailings types and soils.

He has working experience as an environmental monitor / assisting environmental officer at Petra Diamonds, Cullinan Diamond Mine (CDM) where he gained a proper understanding of environmental monitoring responsibilities as well as legislations, regulations and the implementation of EMS/ISO14001. He started working at Geo Pollution Technologies in 2017, and regularly conducts/assists and report on environmental impact assessments, environmental management plans and pollution surveys.

CURRICULUM VITAE WIKUS COETZER

Name of Firm: Geo Pollution Technologies (Pty) Ltd.
Name of Staff: WIKUS COETZER
Profession: Environmental Geologist
Nationality: South African
Position: Environmental Geologist
Specialisation: Environmental Geology / Geochemistry
Languages: Afrikaans – speaking, reading, writing

EDUCATION AND PROFESSIONAL STATUS:

B.Sc. Environmental and Biological Sciences – Geology & Botany: NWU Potchefstroom 2013
B.Sc. (Hons.) Environmental Sciences – Environmental Geology: NWU Potchefstroom 2014

First Aid Class A EMTSS, 2017
Basic Fire Fighting EMTSS, 2017

AREAS OF EXPERTISE:

Knowledge and expertise in:
- Phytoremediation
- Environmental Geology / Geochemistry
- Environmental Monitoring
- Environmental Compliance

EMPLOYMENT:

2017 - : Geo Pollution Technologies
2015 - 2016: Petra Diamonds CDM – Environmental monitor / Assisting environmental officer
2015: Petra Diamonds CDM – Graduate program: Environmental Officer
2014: NWU Potchefstroom department of Geo and Spatial Sciences – Research assistant

PUBLICATIONS:

Contract Reports: +17