Environmental Management Plan

PROPOSED TERMINAL AT NAMPORT FOR STORAGE AND HANDLING OF INDUSTRIAL MINERALS, BASE AND RARE METALS, WALVIS BAY, ERONGO REGION

PROJECT DETAILS

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REPORT DATE:

13 May 2022

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TABLE OF CONTENTS

LIST OF TABLES

ABBREVIATIONS

AIDS	Acquired Immuno-Deficiency Syndrome
DR	Developer's Representative
EA	Environmental Assessment
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
GG	Government Gazette
GIS	Geographic Information System
GN	Government Notice
GPS	Global Positioning System
HIV	Human Immuno-deficiency Virus

I&APs	Interested and Affected Parties
NHC	National Heritage Council
Reg.	Regulation
S	Section
TB	Tuberculosis

1 INTRODUCTION

Namibia has a rich history of mining that spans well over 400 years. The country is home to a diversity of minerals including diamonds, uranium, special high grade zinc, gold, blister copper, lead and zinc concentrate to mention a few. This endowment makes mining the largest contributor to the country's economy in terms of revenue.

Namibia has also made great strides to position itself as a regional logistic hub in the Southern African region. Through the Walvis Bay Corridors, the port of Walvis Bay is linked to major cities and towns in SADC such as Gaborone, Johannesburg, Livingstone, Ndola, Lubumbashi, Santa Clara etc.

Another benefit is that Namibia is seen as a trade logistic alternative to South African and East-African trade channels that are experiencing challenges including multiple inefficient border crossings, worsening security, xenophobia and social instability. Namibia is becoming an increasingly attractive investment option for South African manufacturers, mining companies seeking to beneficiate resources and logistics enterprises seeking a more cost effective location. Customers that understand the comparative advantages of Namibia and the strategic value of utilising BigenKuumba Port Services as a service provider.

Based on the above BigenKuumba saw the opportunity to facilitate trade in commodities between these markets and overseas clients. In addition to contributing to the local economic development of Walvis Bay Town in particular and the country in general, job opportunities will be created with approximately 48 jobs directly and about 400 jobs indirectly.

The proponent appointed Environam Consultants Trading cc (ECT) to undertake the Environmental Assessment (EA) in order to obtain an Environmental Clearance Certificate (ECC) for the activity from the Office of the Environmental Commissioner in the Ministry of Environment, Forestry and Tourism (MEFT).

The process will be undertaken in terms of the gazetted Namibian Government Notice No. 30 Environmental Impact Assessment Regulations (herein referred to as EIA Regulations) of the Environmental Management Act (No 7 of 2007) (herein referred to as the EMA). The EIA process will investigate if there are any potential significant bio-physical and socio-economic impacts associated with the proposed development and related infrastructure and services.

The EIA process would also provide an opportunity for the public and key stakeholders to provide comments and participate in the process. It will also serve the purpose of informing the proponent's decision-making, and that of MEFT.

An EMP is one of the most important outputs of the EA process as it synthesises all of the proposed mitigation and monitoring actions, set to a timeline and with specific assigned responsibilities. This EMP details the mitigation and monitoring actions to be implemented during the following phases of this development:

- Planning and Design – the period, prior to construction, during which preliminary legislative and administrative arrangements, necessary for the preparation of the land, are made and engineering designs are carried out. The preparation of construction tender documents forms part of this phase;
- Construction – the period during which the proponent, having dealt with the necessary legislative and administrative arrangements, appoints a contractor for the construction of services infrastructure, buildings as well as any other construction process(s) within the development areas;
- Operation and Maintenance – the period during which the development will be fully functional, operational and maintained.

It is not envisaged to decommission the development in the immediate future. However, should this be considered at the end of its useful life, the development will be dismantled so as to restore the area to ante operam conditions. A full decommissioning plan should be developed within the first 24 months of operation.

2 ROLES AND RESPONSIBILITIES

BigenKuumba Port Services (the Developer) is ultimately responsible for the implementation of the EMP, from the planning and design phase to the decommissioning phase of this development, if the development is in future decommissioned. The developer will delegate this responsibility as the project progresses through its life cycle. The delegated responsibility for the effective implementation of this EMP will rest on the following key individuals:

- Developer's Representative;
- Environmental Control Officer; and
- Contractor (Construction and Operations and Maintenance).

2.1 DEVELOPER'S REPRESENTATIVE

The Developer should assign the responsibility of managing all aspects of this development for all development phases (including all contracts for work outsourced) to a designated member of staff, referred to in this EMP as the Developer's Representative (DR). The Developer may decide to assign this role to one person for the full duration of the development, or may assign a different DR to each of the development phases – i.e. one for the planning and design phase, one for the construction phase and one for the operation and maintenance phase. The DR's responsibilities are depicted in

Table 2-1 as follows:

Table 2-1: DR's responsibilities

Responsibility	Project Phase
Making sure that the necessary approvals and permissions laid out in **Table 4-1** are obtained/adhered to	Throughout the lifecycle of this development
Making sure that the relevant provisions detailed in **Table 5-1** are addressed during planning and design phase.	Planning and design phase
Suspending/evicting individuals and/or equipment not complying with the EMP	• Construction • Operation and maintenance
Issuing fines for contravening EMP provisions	• Construction • Operation and maintenance

2.2 ENVIRONMENTAL CONTROL OFFICER

The DR should assign the responsibility of overseeing the implementation of the whole EMP on the ground during the construction and operation and maintenance phases to a designated member of staff, referred to in this EMP as the Environmental Control Officer (ECO). The DR/Developer may decide to assign this role to one person for both phases, or may assign a different ECO for each phase. During the operation phase the Developer may outsource the monitoring and evaluation of the EMP to an independent Environmental Consultant. The ECO will have the following responsibilities during the construction and operation and maintenance phases of these developments:

- Management and facilitation of communication between the Developer, DR, the contractors, and Interested and Affected Parties (I&APs) with regard to this EMP;
- Conducting site inspections (recommended minimum frequency is monthly) of all construction and/or infrastructure maintenance areas with respect to the implementation of this EMP (monitor and audit the implementation of the EMP);
- Assisting the Contractor in finding solutions with respect to matters pertaining to the implementation of this EMP;
- Advising the DR on the removal of person(s) and/or equipment not complying with the provisions of this EMP;
- Making recommendations to the DR with respect to the issuing of fines for contraventions of the EMP; and
- Undertaking an annual review of the EMP and recommending additions and/or changes to this document.

2.3 CONTRACTOR

Contractors appointed by the Developer are automatically responsible for implementing all provisions contained within the relevant chapters of this EMP. Contractors will be responsible for the implementation of this EMP applicable to any work outsourced to subcontractors. **Table 5-2** applies to contractors appointed during the construction phase and **Table 5-3** to those appointed during the operation and maintenance phase. In order to ensure effective environmental management the aforementioned chapters should be included in the applicable contracts for outsourced construction, operation and maintenance work.

The tables in **Chapter 5** detail the management measures associated with the roles and responsibilities that have been laid out in this chapter.

3 ASSUMPTIONS AND LIMITATIONS

This EMP has been drafted based on the scoping-level Environmental Assessment (EA) conducted for the proposed development as represented by the developer. ECT will not be held responsible for the potential consequences that may result from any alterations to the initial layout.

It is assumed that construction labourers will be sourced mostly from the Walvis Bay area and that migrant labourers (if applicable) will be housed within the town of Walvis Bay.

4 APPLICABLE LEGISLATION

Legal provisions that have relevance to various aspects of this development are listed in **Table 4-1** below. The legal instrument and applicable corresponding provisions are provided.

Table 4-1: Legal provisions relevant to this development

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
The Constitution of the Republic of Namibia as Amended	Article 91 (c) provides for duty to guard against "the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia." Article 95(l) deals with the "maintenance of ecosystems, essential ecological processes and biological diversity" and sustainable use of the country's natural resources.	Sustainable development should be at the forefront of this development.
Environmental Management Act No. 7 of 2007 (EMA)	Section 2 outlines the objective of the Act and the means to achieve that. Section 3 details the principle of Environmental Management	The development should be informed by the EMA.
EIA Regulations GN 28, 29, and 30 of EMA (2012)	GN 29 Identifies and lists certain activities that cannot be undertaken without an environmental clearance certificate. GN 30 provides the regulations governing the environmental assessment (EA) process.	**Activity 2.2** Any activity entailing a scheduled process referred to in the Atmospheric Pollution Prevention Ordinance, 1976. **Activity 9.1** The manufacturing, storage, handling or processing of a hazardous substance defined in the Hazardous Substances Ordinance, 1974. **Activity 9.2** Any process or activity which requires a permit, licence or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, licence or authorisation or which requires a new permit, licence or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste. **Activity 9.3** The bulk transportation of dangerous goods using pipeline, funiculars or conveyors with a throughout capacity of 50 tons or 50 cubic meters or more per day. **Activity 9.3** The storage and handling of a dangerous goods, including petrol, diesel, liquid petroleum

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
		gas or paraffin, in containers with a combined capacity of more than 30 cubic meters at any one location.
Convention on Biological Diversity (1992)	Article 1 lists the conservation of biological diversity amongst the objectives of the convention.	The project should consider the impact it will have on the biodiversity of the area.
Draft Procedures and Guidelines for conducting EIAs and compiling EMPs (2008)	Part 1, Stage 8 of the guidelines states that if a proposal is likely to affect people, certain guidelines should be considered by the proponent in the scoping process.	The EA process should incorporate the aspects outlined in the guidelines.
Namibia Vision 2030	Vision 2030 states that the solitude, silence and natural beauty that many areas in Namibia provide are becoming sought after commodities and must be regarded as valuable natural assets.	Care should be taken that the development does not lead to the degradation of the natural beauty of the area.
Water Act No. 54 of 1956	Section 23(1) deals with the prohibition of pollution of underground and surface water bodies.	The pollution of water resources should be avoided during construction and operation of the development.
The Ministry of Environment, Forestry and Tourism (MEFT) Policy on HIV & AIDS	MEFT has developed a policy on HIV and AIDS. In addition, it has also initiated a programme aimed at mainstreaming HIV and gender issues into environmental impact assessments.	The proponent and its contractor/s have to adhere to the guidelines provided to manage the aspects of HIV/AIDS. Experience with construction projects has shown that a significant risk is created when construction workers interact with local communities.
Urban and Regional Planning Act (Act of 2018).	Urban and Regional Planning Act (Act of 2018) regulates subdivisions of portions of land falling within a proclaimed Local Authority area.	Section 16 of Chapter 3 deals with the Ministers' declaration of authorised planning authorities and establishment of joint committees.
Local Authorities Act No. 23 of 1992	The Local Authorities Act prescribes the manner in which a town or municipality should be managed by the Town or Municipal Council. Sections 34-47 make provision for the aspects of water and sewerage.	The development has to be comply with the provisions of the Local Authorities Act
Labour Act no 11 of 2007	Chapter 2 details the fundamental rights and protections. Chapter 3 deals with the basic conditions of employment.	Given the employment opportunities presented by the development, compliance with the labour law is essential.
Public Health Act no 36 of 1919	Section 119 prohibits persons from causing nuisance.	The developer and contractors are to comply with these legal requirements.
Nature Conservation Ordinance no 4 of 1975	Chapter 6 provides for legislation regarding the protection of indigenous plants	Indigenous and protected plants have to be managed within the legal confines.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
Atmospheric Pollution Prevention Ordinance (No. 11 of 1976).	The Ordinance objective is to provide for the prevention of the pollution of the atmosphere, and for matters incidental thereto.	All activities on the site will have to take due consideration of the provisions of this legislation.
Roads Ordinance 17 of 1972	This Ordinance consolidates the laws relating to roads.	The provisions of this legislation have to be taken into consideration in as far as access to the development site is concerned.
Roads Authority Act, 1999	Section 16(5) of this Act places a duty on the Roads Authority to ensure a safe road system.	Some functions of the Roads Ordinance 17 of 1972 have been assigned to the Roads Authority.
Walvis Bay Town Planning Scheme.	The town planning scheme has as its general purpose the co-ordinated and harmonious development of the local authority area, or the area or areas situate therein.	The site fall in the local authority area of Walvis Bay and has to conform to the Walvis Bay Town Planning Scheme.

5 MANAGEMENT ACTIONS

The aim of the management actions in this chapter of the EMP is to avoid potential impacts where possible. Where impacts cannot be avoided, measures are provided to reduce them.

The following tables provide the management actions recommended to manage the potential impacts rated in the scoping-level EA conducted for this development. These management actions have been organised temporally according to project phase:

- Planning and design phase management actions (**Table 5-1**);
- Construction phase management actions (**Table 5-2**);
- Operation and maintenance phase management actions (**Table 5-3**);
- Decommissioning phase management actions (**Error! Reference source not found.**).

The responsible persons at the Developer's team have assessed these commitments in detail and have committed to the specific management actions where indicated in the tables below.

5.1 PLANNING AND DESIGN PHASE

The DR should ensure that the management actions detailed below in **Table 5-1** are adhered to during the period before the construction of the infrastructure starts.

Table 5-1: Planning and design management actions

PLANNING AND DESIGN PHASE IMPACTS	
Impact	**Mitigation Measures**
Surface and Ground Water	• Appoint professional engineers to develop a detailed storm water management design as part of the infrastructure service provision of the development. • The service infrastructure should be designed and constructed by suitably qualified engineering professionals. • Develop and implement a preventative maintenance plan for the service infrastructure. • No dumping of waste products of any kind in or in close proximity to any water bodies. • Ensure that surface water accumulating on-site are channelled and captured through a proper storm water management system to be treated in an appropriate manner before disposal into the environment. • Wastewater should not be discharged directly into the environment. • Disposal of waste from the development should be properly managed. • 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. • 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. • 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.

PLANNING AND DESIGN PHASE IMPACTS	
Impact	**Mitigation Measures**
	• 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. • Any fuel spillage of more than 200 litres 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. • 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.
Air Quality	• Ensure that personnel handling the bags and storage equipment are made aware of the risk associated with manganese so that they know the potential impact on them. • Ensure a personnel monitoring programme needs is set up in accordance with the guidelines of existing accepted practice and the Labour Act of Namibia. • Conduct regular air quality monitoring on site. The dust should be analysed for hazardous substances such as asbestos, radioactivity etc. • Report any incidents immediately. • Make use of the rub halls already on site for storage and handling of material. • Ensure that storage areas are paved with impermeable material to guarantee containment and prevent seepage into the underground. • Minimise the duration of stockpiles.

PLANNING AND DESIGN PHASE IMPACTS	
Impact	**Mitigation Measures**
	• Use dust suppressant technologies to manage dispersal and pollution. • Maintain roads. • Limit movement and number of vehicles and adhere to off road speed limit. • Ensure personnel wears correct PPE to prevent exposure to particulate matters. • Building interiors and surfaces should be cleaned regularly. Strict adherence to housekeeping practices will help reduce dust levels. • Air quality in Walvis Bay or receptors on any part of the transport route and at receptors may not increase above 0.0003 mg/m3. • Air quality monitoring must be conducted on site and at the port area to monitor ore dust fallout • Check all bulk bags prior to filling to ensure they are not damaged. • Ensure that forklift, front-end loaders and other machine operators suitably trained. • All truck loads must be suitably covered to prevent the escape of dust from the load bin. This include empty trucks that may still contain some dust. • Once dust plumes that cannot be contained becomes visible, all operations must cease with immediate effect and only restart once sufficient mitigation measures have been implemented or when the cause of dust subsides. Operational processes include activities such as handling and loading / offloading of ore at the bulk storage yard, transport through town, offloading in the port, etc. • Ensure all machinery and vehicles are kept in good condition and maintained/ serviced regularly. • Sprinklers should be installed at the coal stockpiles. • Coal should be wetted before transportation. • Coal at stockpiles should be compacted. • Temperature monitoring and removal of coal from staith when temperature is above 40 degrees Celsius. • Coal staith and Conveyors are partially enclosed to minimise fugitive emissions. • Wind breakers and sprinkler system should be installed along the stockpile perimeter to reduce the formation of fugitive dust from coal storage. • Preventative and corrective maintenance should be done on equipment and machinery. • Dust suppression infrastructure should be in good working order. • Spills on conveyor routes must be cleaned up.

PLANNING AND DESIGN PHASE IMPACTS	
Impact	**Mitigation Measures**
	• Plant improvements should be done to prevent recurring spills. • Any complaints received regarding ore dust along the transport routes and sites of handling of ore must be recorded, investigated and the problem rectified. Any incidents must be recorded with action taken to prevent future occurrences. • A report should be compiled every 6 months of all incidents reported and monitoring performed. The report should contain dates when safety equipment and structures were inspected and maintained.
Fauna and Flora	• Report any extraordinary fauna sightings to the Ministry of Environment, Forestry and Tourism and / or Ministry of Fisheries and Marine Resources. • 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. • 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.
Existing Service Infrastructure	• Ensure professional design and construction of service infrastructure from qualified and registered engineers. • Ensure consultation and compliance with relevant authorities responsible for services, such as the Municipality, Erongo Red and Namwater. • 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). • Designs and building materials should be as such to reduce dependency on artificial heating and cooling in order to limit the overall energy demand. • Water saving mechanisms should be incorporated within the proposed development's design and plans in order to further reduce water demands. • Train employees on the importance of water and energy savings. • Adhere to water quality guidelines in terms of The Water Act, 1956.

PLANNING AND DESIGN PHASE IMPACTS	
Impact	**Mitigation Measures**
	• No structures are allowed to be built on or over the existing 11 Kva cable. The cable must be protected before any vehicle traffic is allowed to cross it. The protection must be done to the Port Engineer's satisfaction.
Traffic	• Confirm acceptable transport route with the Municipality Traffic Department, and adhere to it. • Ensure drivers overnighting in Walvis Bay have proper facilities to do so. • Drivers to comply to local traffic rules. • Ensure drivers are endorsed to operate trucks and vehicles, with hazardous substances. • Ensure that road junctions have good sightlines. • Limit the type of vehicles to use the internal roads e.g. heavy trucks. • Adhere to the speed limit. • Implement traffic control measures where necessary. • 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. • 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.

5.2 CONSTRUCTION PHASE

The management actions listed in **Table 5-2** apply during the construction phase. This table may be used as a guide when developing EMPs for other construction activities within this development area.

Table 5-2: Construction phase management actions

CONSTRUCTION PHASE IMPACTS	
Impact	**Mitigation Measures**
Fauna and flora	• Report any extraordinary fauna sightings to the Ministry of Environment, Forestry and Tourism and / or Ministry of Fisheries and Marine Resources. • 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. • 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.
Pressure on existing infrastructure	• Educate workforce on water saving measures. • Ensure all potable water points are metered and regularly read. • Ensure that the workforce is provided with temporary toilets during the construction phase.
Surface and Ground Water	• It is recommended that construction takes place outside of the rainy season in order to limit flooding on site and to limit the risk of ground and surface water pollution. • No dumping of waste products of any kind in or in close proximity to water bodies. • Heavy construction vehicles should be kept out of any surface water bodies and the movement of construction vehicles should be limited where possible to the existing roads and tracks. • Ensure that oil/ fuel spillages from construction vehicles and machinery are minimised and that where these occur, that they are appropriately dealt with. • Drip trays must be placed underneath construction vehicles when not in use to contain all oil and spillages that might be leaking from these vehicles. • Contaminated runoff from the construction sites should be prevented from entering the surface and ground water bodies. • All materials on the construction site should be properly stored. • Disposal of waste from the site should be properly managed and taken to the Walvis Bay landfill site. • Construction workers should be given ablution facilities at the construction site that are located at least 30 m away from any surface water and these should be regularly serviced.

CONSTRUCTION PHASE IMPACTS	
Impact	**Mitigation Measures**
	• Washing of personnel or any equipment should not be allowed on site. Should it be necessary to wash construction equipment this should be done at an area properly suited and prepared to receive and contain contaminated waters.
Health, Safety and Security	• Construction personnel should not overnight at the site, except for security personnel. • Ensure that all construction personnel are properly trained depending on the nature of their work. • Provide for a first aid kit and properly trained personnel to apply first aid when necessary. • A wellness program should be initiated to raise awareness on health issues, especially the impact of sexually transmitted diseases and Covid-19. • Provide free condoms in the workplace throughout the construction phase. • Facilitate access to Antiretroviral medication for construction personnel. • Conform to the stipulated protocols related to Covid-19. • Restrict unauthorised access to the site and implement access control measures. • Clearly demarcate the construction site boundaries along with signage of no unauthorised access. • Clearly demarcate dangerous areas and no go areas on site. • Staff and visitors to the site must be fully aware of all health and safety measures and emergency procedures. • The contractor/s must comply with all applicable occupational health and safety requirements. The workforce should be provided with all necessary Personal Protective Equipment where appropriate.
Air quality	• All loose material should be kept on site for the shortest possible time. • It is recommended that dust suppressants such as Dustex be applied to all the construction clearing activities to minimise dust. • Construction vehicles to only use designated roads. • During high wind conditions the contractor must make the decision to cease works until the wind has calmed down. • Cover any stockpiles with plastic to minimise windblown dust. • Ensure construction vehicles are well maintained to prevent excessive emission of smoke.
Noise	• No amplified music should be allowed on site.

CONSTRUCTION PHASE IMPACTS	
Impact	**Mitigation Measures**
	• Inform neighbouring communities and companies of construction activities to commence and provide for continuous communication between them and contractor. • Limit construction times to acceptable daylight hours. • Install technology such as silencers on construction machinery. • Do not allow the use of horns/hooters as a general communication tool, but use it only where necessary as a safety measure. • Provide protective equipment such as ear muffs, masks and ear plugs to workers.
Traffic	• Limit and control the number of access points to the site. • Ensure that road junctions have good sightlines. • Construction vehicles' need to be in a road worthy condition and maintained throughout the construction phase. • Transport the materials in the least amount of trips as possible. • Adhere to the speed limit. • Implement traffic control measures where necessary. • Minimise the movement of heavy vehicles during peak time.
Waste Management	• It is recommended that waste from the temporary toilets be disposed of at the Walvis Bay Wastewater Treatment Works, on a regular basis. • A sufficient number of waste bins should be placed around the site for the soft refuse. • A sufficient number of skip containers for the heavy waste and rubble should be provided for around the site. • The waste containers should be able to be closed to prevent birds and other animals from scavenging. • Solid waste will be collected and disposed of at an appropriate local landfill in Walvis Bay, in consultation with the local authority.

CONSTRUCTION PHASE IMPACTS	
Impact	**Mitigation Measures**
Hazardous Substances	• All chemicals and other hazardous substances must be stored and maintained in accordance with the Hazardous Substances Ordinance (No. 14 of 1974), with all relevant licences and permits to be obtained where applicable. • Given the potential harm to human health during handling and use of any of hazardous substances it is essential that all staff be trained with regards to the proper handling of these substances as well as First Aid in the case of spillage or intoxication. • Storage areas for all substances should be bunded and capable to hold 120% of the total volume of a given substance stored on site.
Social	• Ensure locals enjoy priority in terms of job opportunities, to the extent possible, for skills that are available locally. • Ensure local procurement where commodities are available locally.

5.3 OPERATION AND MAINTENANCE PHASE

The management actions included in **Table 5-3** below apply during the operation and maintenance phase of this development.

Table 5-3: Operation and maintenance management actions

OPERATIONAL PHASE IMPACTS	
Impact	**Mitigation Measures**
Environmental monitoring and Evaluation	• An Environmental Practitioner should monitor the implementation of the EMP, and recommend any changes to this document when necessary. • The Environmental Practitioner should inspect the site on a regular basis (preferably monthly or bi-monthly). • Biannual reports are to be submitted to the Environmental Commissioner.

OPERATIONAL PHASE IMPACTS	
Impact	**Mitigation Measures**
Visual and Sense of Place	• The proposed development is not expected to deviate significantly from the character of the development area and would therefore not be significantly visually intrusive. It is however, still important that the aesthetics quality of any new structures has to be pleasing and designed to blend in with the natural surrounds.
Noise	• 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. • 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.
Impact on human health	• Ensure that personnel handling the bags and storage equipment are made aware of the risk associated with manganese and other minerals so that they know the potential impact on them. • Ensure a personnel monitoring programme needs is set up in accordance with the guidelines of existing accepted practice and the Labour Act of Namibia. • Conduct regular air quality monitoring on site. The dust should be analysed for hazardous substances such as asbestos, radioactivity etc. • Report any incidents immediately. • Make use of the rub halls already on site for storage and handling of material.

OPERATIONAL PHASE IMPACTS	
Impact	**Mitigation Measures**
	• Use dust suppressant technologies to manage dispersal and pollution. • Ensure personnel wears correct PPE to prevent exposure to particulate matters. • Air quality monitoring must be conducted on site and at the port area to monitor ore dust fallout • Once dust plumes that cannot be contained becomes visible, all operations must cease with immediate effect and only restart once sufficient mitigation measures have been implemented or when the cause of dust subsides. Operational processes include activities such as handling and loading / offloading of ore at the bulk storage yard, transport through town, offloading in the port, etc.
Waste management	• The area will be kept free of waste, except in designated waste storage areas. Any wastes distributed by winds will be regularly cleaned up. • A sufficient number of waste bins should be placed around the site for the soft refuse. • A sufficient number of skip containers for the heavy waste and rubble should be provided for around the site. • Solid waste will be collected and disposed of at an appropriate local land fill. • Categorise waste into various types such as hazardous, general and recyclable. • Hazardous waste to be disposed of at the appropriate facilities of the Walvis Bay Municipality. • Place priority on waste reduction, waste reuse and waste recycling, in that order.
Social	• 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.

5.4 DECOMMISSIONING PHASE

It is not envisaged to decommission the terminal in the immediate future. However, should this be considered at the end of its useful life, the development will be dismantled so as to restore the area to *ante operam* conditions. A full decommissioning plan should be developed within the first 24 months of operation.

Appendix A – Water Quality Guidelines