

**APP-003347**

**DEVELOPMENT AND OPERATIONS OF A COMMON USER  
MANGANESE EXPORT TERMINAL IN THE PORT OF  
LÜDERITZ**

**ENVIRONMENTAL ASSESSMENT SCOPING REPORT**



**Assessed by:**




**Assessed for:**



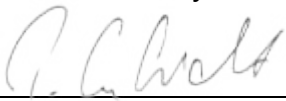
December 2021



<b>Project:</b>	<b>DEVELOPMENT AND OPERATIONS OF A COMMON USER MANGANESE EXPORT TERMINAL IN THE PORT OF LÜDERITZ: ENVIRONMENTAL ASSESSMENT SCOPING REPORT</b>	
<b>Report Version/Date:</b>	Final December 2021	
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<b>Cite this document as:</b>	Faul A, Bosman Q, Botha P. 2021 December. Development and Operations of a Common User Manganese Export Terminal in the Port of Lüderitz: Environmental Assessment Scoping Report	
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<b>Report Approval</b>	 <b>André Faul</b> Conservation Ecologist	

I P. Kohlstaedt acting as the Proponent's representative (Lüderitz Bay Shipping and Forwarding (Pty) Ltd), hereby approve this report and confirm that the project description contained in herein 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.

Signed at Walvis Bay on the 16th day of December 2021.

  
 Lüderitz Bay Shipping and Forwarding (Pty) Ltd

Reg. Number 97/450  
 Company Registration



## SUMMARY

Lüderitz Bay Shipping and Forwarding (Pty) Ltd (the Proponent) requested Geo Pollution Technologies (Pty) Ltd to conduct an environmental scoping assessment for the development and operations of a common user manganese export terminal (CUMET) in the Port of Lüderitz. The terminal will receive manganese ore from mines located in the Northern Cape of South Africa and will be responsible for the temporary stockpiling and subsequent loading of the ore onto vessels berthed in the Port of Lüderitz. Through this development, the Port of Lüderitz will be boosted as a reliable and efficient port of choice for the export of manganese ore from southern Africa to international clients.

As part of the planning phase, the Proponent initiated an environmental impact assessment (EIA) process with the aim of obtaining an environmental clearance certificate (ECC) for the proposed CUMET project. Geo Pollution Technologies (Pty) Ltd was appointed to draft an environmental scoping report and environmental management plan (EMP) for the development and operations of the CUMET project. Aspects of the development that forms part of the environmental assessment includes all activities that will take place within port bounds. That is arrival of a truck or train at the port, offloading of manganese ore within a purpose built warehouse for stockpiling, loading of a barge (or transshipment vessels) berthed at the quay wall, and all administrative and ancillary tasks required for efficient and reliable operations.

The study is conducted to determine all environmental, safety, health and socio-economic impacts associated with the development and operations of the facility. Relevant environmental data has been compiled by making use of secondary data and a reconnaissance site visit. Potential environmental impacts and associated social impacts were identified and are addressed in this report. Due to the nature and location of the project, impacts can be expected on the surrounding environment, see summary impacts table below. The property is within the port which is earmarked for industrial type uses, but is also surrounded by mixed land-uses. It is recommended that environmental performance be monitored regularly to ensure regulatory compliance and that corrective measures be taken if necessary. The operations of the project will play an important role in the export of manganese ore from South Africa via Namibia.

The major concerns related to the operations of the project are that of dust and its potential environmental contamination and health effects, increase in noise in the port and town and increased traffic. Preventative and mitigation measures can reduce the negative impacts while promoting positive impacts. The nature of the project is however such that it will require a collective effort by all stakeholders involved, to truly address some of the concerns regarding impacts in the town. These relate mainly to traffic and noise.

In terms of operations of the CUMET itself, noise levels should meet the requirements of the World Health Organisation standards. Dust suppression should be conducted at all times to prevent the escape of dust and contamination of the environment. Operators inside the warehouse must wear appropriate personal protective equipment to ensure protection against potential adverse effects of exposure to the ore and its dust. Operational areas must be kept clean to prevent runoff of manganese contaminated water into the ocean. By appointing local contractors and employees and implementing educational programs, the positive socio-economic impacts can be maximised while mitigating any negative impacts.

The EMP included in Section 10 of this document should be used as an on-site reference document during all phases of the facility. All monitoring and records kept should be included in bi-annual reports to ensure compliance with the EMP. Parties responsible for transgression of the EMP should be held responsible for any rehabilitation that may need to be undertaken. The Proponent's management systems on health, safety, environment and quality should be used in conjunction with the EMP. Operators and responsible personnel must be taught the contents of these documents.

### Impact Summary Class Values Prior to Mitigation

Impact Category	Impact Type	Construction		Operations	
<i>Positive Rating Scale: Maximum Value</i>		5		5	
<i>Negative Rating Scale: Maximum Value</i>			-5		-5
EO	Contribution to the National Economy	4			5
EO	Employment, Remuneration and Spending Power	3			4
EO/SC	Skills, Technology and Development	3			3
EO/SC	Ideals and Aspirations for the Future	2			2
SC	Demographic Profile and Community Health		-1		-2
SC/EO	Traffic		-1		-3
SC/EO	Employee Health and Safety		-2		-4
SC/EO/PC/BE	Air Quality and Related Impacts		-3		-3
EO	Site Security		-2		-3
PC/EO	Fire		-1		-1
PC	Noise		-1		-4
PC	Waste Production		-2		-2
BE	Ecosystem and Biodiversity Impact - Terrestrial				-3
BE/EO	Ecosystem and Biodiversity Impact - Marine				-3
PC	Groundwater, Surface Water and Soil Contamination		-2		-3
EO	Impacts on Utilities, Infrastructure		-3		-3
SC/EO	Visual Impact		-2		-3
SC/EO	Sense of Place		-2		-4
SC/EO/PC/BE	Cumulative Impact		-2		-3

BE = Biological/Ecological    EO = Economical/Operational    PC = Physical/Chemical    SC = Sociological/Cultural

## TABLE OF CONTENTS

<b>1</b>	<b>BACKGROUND AND INTRODUCTION</b> .....	<b>1</b>
<b>2</b>	<b>SCOPE</b> .....	<b>2</b>
<b>3</b>	<b>METHODOLOGY</b> .....	<b>2</b>
<b>4</b>	<b>DEVELOPMENT AND OPERATIONS</b> .....	<b>2</b>
4.1	BACKGROUND TO THE PROJECT .....	3
4.2	OVERVIEW OF VARIOUS COMPONENTS AT PLAY .....	3
4.2.1	<i>The Ore Reserves</i> .....	3
4.2.2	<i>Ore Transport</i> .....	3
4.2.3	<i>Truck-Staging Area</i> .....	4
4.2.4	<i>Port Activities</i> .....	4
4.2.5	<i>Transshipment</i> .....	4
4.3	THE CUMET .....	4
4.3.1	<i>Warehouse Construction</i> .....	4
4.3.2	<i>Vessel Loading</i> .....	6
4.3.3	<i>CUMET Operations</i> .....	7
4.3.4	<i>Interim Options</i> .....	8
<b>5</b>	<b>ALTERNATIVES</b> .....	<b>9</b>
5.1	NO-GO OPTION .....	10
<b>6</b>	<b>ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS</b> .....	<b>10</b>
<b>7</b>	<b>ENVIRONMENTAL CHARACTERISTICS</b> .....	<b>15</b>
7.1	LOCALITY AND SURROUNDING LAND USE .....	15
7.2	CLIMATE .....	16
7.3	CORROSIVE ENVIRONMENT .....	21
7.4	TOPOGRAPHY AND DRAINAGE.....	21
7.5	GEOLOGY AND HYDROGEOLOGY .....	22
7.6	PUBLIC WATER SUPPLY .....	22
7.7	ECOLOGY .....	23
7.7.1	<i>Terrestrial</i> .....	23
7.7.2	<i>Avifauna</i> .....	25
7.7.1	<i>Marine and Coastal</i> .....	27
7.1	DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS .....	28
7.1.1	<i>Demographic Characteristics</i> .....	28
7.1.2	<i>The Port of Lüderitz</i> .....	29
7.1.3	<i>Mining</i> .....	29
7.1.4	<i>Fishing and Mariculture</i> .....	30
7.1.5	<i>Tourism</i> .....	31
7.2	CULTURAL, HERITAGE AND ARCHAEOLOGICAL ASPECTS .....	31
<b>8</b>	<b>PUBLIC CONSULTATION</b> .....	<b>32</b>
<b>9</b>	<b>MAJOR IDENTIFIED IMPACTS</b> .....	<b>33</b>
9.1	EMPLOYMENT.....	33
9.2	ECONOMIC IMPACTS .....	33
9.3	TOURISM IMPACTS .....	33
9.4	AIR QUALITY RELATED HEALTH IMPACTS .....	34
9.5	MARINE IMPACTS .....	35
9.6	TERRESTRIAL ECOLOGY AND AVIFAUNA IMPACTS.....	36
9.7	TRAFFIC IMPACTS.....	36
9.8	CUMULATIVE IMPACTS RELATED TO TRANSPORT AND THE TOWN.....	36
<b>10</b>	<b>ASSESSMENT AND MANAGEMENT OF IMPACTS</b> .....	<b>37</b>
10.1	RISK ASSESSMENT AND ENVIRONMENTAL MANAGEMENT PLAN .....	38
10.1.1	<i>Planning</i> .....	39
10.1.2	<i>Contribution to the National Economy (Revenue &amp; Investment Confidence)</i> .....	40

10.1.3	Employment, Remuneration and Spending Power .....	41
10.1.4	Skills, Technology and Development .....	42
10.1.5	Ideals and Aspirations for the Future .....	43
10.1.6	Demographic Profile and Community Health .....	44
10.1.7	Traffic .....	45
10.1.8	Employee Health and Safety (Warehouse and Quayside).....	46
10.1.9	Air Quality Related Impacts.....	48
10.1.10	Site Security .....	50
10.1.11	Fire .....	51
10.1.12	Noise .....	52
10.1.13	Waste production .....	53
10.1.14	Ecosystem and Biodiversity Impact - Terrestrial.....	54
10.1.15	Ecosystem and Biodiversity Impact - Marine .....	55
10.1.16	Groundwater, Surface Water and Soil Contamination .....	56
10.1.17	Impacts on Local Utilities and Infrastructure.....	58
10.1.18	Visual Impact .....	59
10.1.19	Sense of Place .....	60
10.1.20	Cumulative Impact.....	61
10.2	DECOMMISSIONING AND REHABILITATION .....	62
10.3	ENVIRONMENTAL MANAGEMENT SYSTEM .....	62
<b>11</b>	<b>CONCLUSION.....</b>	<b>62</b>
<b>12</b>	<b>REFERENCES.....</b>	<b>64</b>

### **LIST OF FIGURES**

FIGURE 1-1.	PROJECT LOCATION .....	2
FIGURE 4-1.	PROPOSED WAREHOUSE LAYOUT .....	5
FIGURE 4-2.	WAREHOUSE SECTION .....	6
FIGURE 4-3.	CONVEYOR LOADING SYSTEM MAIN COMPONENTS .....	6
FIGURE 4-4.	EXAMPLE OF THE LOADING SYSTEM WITH SOME OF THE DUST SUPPRESSION SYSTEMS TO BE USED .....	7
FIGURE 7-1.	SURROUNDING LAND USE.....	16
FIGURE 7-2.	MAP INDICATING THE INTERTROPICAL CONVERGENCE ZONE, SUBTROPICAL HIGH PRESSURE ZONE (SAH+), BENGUELA CURRENT AND TEMPERATE ZONE SOUTH OF TROPIC OF CAPRICORN (NOT INDICATED) (FROM: <a href="http://www.meteoweb.eu">HTTP://WWW.METEOWEB.EU</a> ) .....	17
FIGURE 7-3	JANUARY TO JUNE WIND ROSES ( <a href="http://www.mesonet.agron.iastate.edu/">WWW.MESONET.AGRON.IASTATE.EDU/</a> ) .....	19
FIGURE 7-4.	JULY TO DECEMBER WIND ROSES ( <a href="http://www.mesonet.agron.iastate.edu/">WWW.MESONET.AGRON.IASTATE.EDU/</a> ).....	20
FIGURE 7-5.	TWENTY YEAR CORROSION EXPOSURE RESULTS IN SOUTHERN AFRICAN TOWNS (CALLAGHAN 1991).....	21
FIGURE 7-6.	POTABLE WATER SUPPLY AND USAGE STATISTICS.....	23
FIGURE 7-7.	PROJECT LOCATION IN RELATION TO TERRESTRIAL PROTECTED AREAS .....	24
FIGURE 7-8.	TREAD LIGHT AND NO-GO AREAS AS IDENTIFIED IN THE LÜDERITZ STRUCTURE PLAN (SPC, 2015) .....	24
FIGURE 7-9.	LÜDERITZ BAY ISLANDS IMPORTANT BIRD AREA (IBA NA017) .....	25
FIGURE 7-10.	MARINE PROTECTED AREAS IN RELATION TO THE CUMET WAREHOUSE .....	28
FIGURE 7-11.	MARICULTURE AREAS AROUND LÜDERITZ .....	30

### **LIST OF PHOTOS**

PHOTO 4-1.	PROPOSED WAREHOUSE AREA.....	8
PHOTO 4-2.	RAIL SIDING TO FUTURE WAREHOUSE.....	8
PHOTO 4-3.	VIEW OF QUAY FROM NORTH TO SOUTH.....	9
PHOTO 4-4.	VIEW OF QUAY FROM SOUTH TO NORTH.....	9
PHOTO 7-1.	KRABBENHÖFT UND LAMPE BUILDING .....	32
PHOTO 7-2.	DEUTSCHE AFRICA BANK BUILDING.....	32



## **LIST OF TABLES**

TABLE 5-1.	ALTERNATIVES.....	9
TABLE 6-1.	NAMIBIAN LAW APPLICABLE TO THE FACILITY AND RELATED OPERATIONS .....	10
TABLE 6-2.	RELEVANT MULTILATERAL ENVIRONMENTAL AGREEMENTS FOR NAMIBIA AND THE DEVELOPMENT.....	13
TABLE 6-3.	STANDARDS OR CODES OF PRACTISE.....	14
TABLE 7-1.	SUMMARY OF CLIMATE DATA (ATLAS OF NAMIBIA PROJECT, 2002) .....	18
TABLE 7-2.	KEY BIRD SPECIES IN IBA NA017 (LIST NOT EXHAUSTIVE).....	26
TABLE 7-3.	DEMOGRAPHIC CHARACTERISTICS OF LÜDERITZ CONSTITUENCY, THE //KARAS REGION AND NATIONALLY (NAMIBIA STATISTICS AGENCY, 2011) .....	29
TABLE 10-1.	ASSESSMENT CRITERIA.....	37
TABLE 10-2.	ENVIRONMENTAL CLASSIFICATION (PASTAKIA 1998).....	38
TABLE 11-1.	IMPACT SUMMARY CLASS VALUES PRIOR TO MITIGATION .....	63

## **LIST OF APPENDIXES**

APPENDIX A:	PROOF OF PUBLIC CONSULTATION.....	67
APPENDIX B:	CONSULTANTS' CURRICULUM VITAE .....	92

## LIST OF ABBREVIATIONS

<b>AIDS</b>	Acquired Immune Deficiency Syndrome
<b>BE</b>	Biological/Ecological
<b>BCLME</b>	Benguela Current Large Marine Ecosystem
<b>CUMET</b>	Common User Manganese Export Terminal
<b>EIA</b>	Environmental Impact Assessment
<b>EMA</b>	Environmental Management Act No 7 of 2007
<b>EMP</b>	Environmental Management Plan
<b>EMS</b>	Environmental Management System
<b>EO</b>	Economic/Operational
<b>ES</b>	Environmental Classification
<b>HIV</b>	Human Immunodeficiency Virus
<b>IAPs</b>	Interested and Affected Parties
<b>IBA</b>	Important Bird Area
<b>IUCN</b>	International Union for Conservation of Nature
<b>m/s or mps</b>	Meter per second
<b>MABL</b>	Marine Atmospheric Boundary Layer
<b>mbs</b>	Meters below surface
<b>MEFT</b>	Ministry of Environment, Forestry and Tourism
<b>Mt</b>	Megatons
<b>NDP5</b>	Fifth National Development Plan
<b>RTMS</b>	Road Traffic Management System
<b>NIMPA</b>	Namibian Islands' Marine Protected Area
<b>mm/a</b>	Millimetres per annum
<b>mm/a</b>	Millimetres per annum
<b>MSDS</b>	Material Safety Data Sheet
<b>PBL</b>	Planetary Boundary Layer
<b>PC</b>	Physical/Chemical
<b>PPE</b>	Personal Protective Equipment
<b>ppm</b>	Parts per million
<b>SAH</b>	South Atlantic High
<b>SAH+</b>	Subtropical High Pressure Zone
<b>SC</b>	Sociological/Cultural
<b>WHO</b>	World Health Organization
<b>mg/m<sup>3</sup></b>	Milligram per cubic meter
<b>ISO</b>	International Organization for Standardization
<b>OSHA</b>	Occupational Safety and Health Administration
<b>SADC</b>	Southern African Development Community
<b>µg/m<sup>3</sup></b>	Microgram per cubic meter
<b>CUMET</b>	Common User Manganese Export Terminal
<b>ATSDR</b>	Agency for Toxic Substances and Disease Registry
<b>mCD</b>	Metres relative to Chart Datum
<b>HC5(50)</b>	Hazardous Concentration 5 value at 50% confidence
<b>IMDG</b>	International Maritime Dangerous Goods Code
<b>IMO</b>	International Maritime Organization
<b>MARPOL</b>	International Convention for the Prevention of Pollution from Ships
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>ISPS</b>	International Ship and Port Facility Security Code

## **GLOSSARY OF TERMS**

**Alternatives** - A possible course of action, in place of another, that would meet the same purpose and need but which would avoid or minimize negative impacts or enhance project benefits. These can include alternative locations/sites, routes, layouts, processes, designs, schedules and/or inputs. The “no-go” alternative constitutes the ‘without project’ option and provides a benchmark against which to evaluate changes; development should result in net benefit to society and should avoid undesirable negative impacts.

**Assessment** - The process of collecting, organising, analysing, interpreting and communicating information relevant to decision making.

**Competent Authority** - means a body or person empowered under the local authorities act or Environmental Management Act to enforce the rule of law.

**Construction** - means the building, erection or modification of a facility, structure or infrastructure that is necessary for the undertaking of an activity, including the modification, alteration, upgrading or decommissioning of such facility, structure or infrastructure.

**Cumulative Impacts** - in relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

**Environment** - As defined in the Environmental Assessment Policy and Environmental Management Act - “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, palaeontological or social values”.

**Environmental Impact Assessment (EIA)** - process of assessment of the effects of a development on the environment.

**Environmental Management Plan (EMP)** - A working document on environmental and socio-economic mitigation measures, which must be implemented by several responsible parties during all the phases of the proposed project.

**Environmental Management System (EMS)** - An Environment Management System, or EMS, is a comprehensive approach to managing environmental issues, integrating environment-oriented thinking into every aspect of business management. An EMS ensures environmental considerations are a priority, along with other concerns such as costs, product quality, investments, PR productivity and strategic planning. An EMS generally makes a positive impact on a company’s bottom line. It increases efficiency and focuses on customer needs and marketplace conditions, improving both the company’s financial and environmental performance. By using an EMS to convert environmental problems into commercial opportunities, companies usually become more competitive.

**Evaluation** – means the process of ascertaining the relative importance or significance of information, the light of people’s values, preference and judgements in order to make a decision.

**Hazard** - Anything that has the potential to cause damage to life, property and/or the environment. The hazard of a particular material or installation is constant; that is, it would present the same hazard wherever it was present.

**Interested and Affected Party (IAP)** - any person, group of persons or organisation interested in, or affected by an activity; and any organ of state that may have jurisdiction over any aspect of the activity.

**Mitigate** - The implementation of practical measures to reduce adverse impacts.

**Proponent (Applicant)** - Any person who has submitted or intends to submit an application for an authorisation, as legislated by the Environmental Management Act no. 7 of 2007, to undertake an

activity or activities identified as a listed activity or listed activities; or in any other notice published by the Minister or Ministry of Environment, Forestry & Tourism.

**Public** - Citizens who have diverse cultural, educational, political and socio-economic characteristics. The public is not a homogeneous and unified group of people with a set of agreed common interests and aims. There is no single public. There are a number of publics, some of whom may emerge at any time during the process depending on their particular concerns and the issues involved.

**Scoping Process** - process of identifying: issues that will be relevant for consideration of the application; the potential environmental impacts of the proposed activity; and alternatives to the proposed activity that are feasible and reasonable.

**Significant Effect/Impact** - means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.

**Stakeholder Engagement** - The process of engagement between stakeholders (the proponent, authorities and IAPs) during the planning, assessment, implementation and/or management of proposals or activities. The level of stakeholder engagement varies depending on the nature of the proposal or activity as well as the level of commitment by stakeholders to the process. Stakeholder engagement can therefore be described by a spectrum or continuum of increasing levels of engagement in the decision-making process. The term is considered to be more appropriate than the term “public participation”.

**Stakeholders** - A sub-group of the public whose interests may be positively or negatively affected by a proposal or activity and/or who are concerned with a proposal or activity and its consequences. The term therefore includes the proponent, authorities (both the lead authority and other authorities) and all interested and affected parties (IAPs). The principle that environmental consultants and stakeholder engagement practitioners should be independent and unbiased excludes these groups from being considered stakeholders.

**Sustainable Development** - “Development that meets the needs of the current generation without compromising the ability of future generations to meet their own needs and aspirations” – the definition of the World Commission on Environment and Development (1987). “Improving the quality of human life while living within the carrying capacity of supporting ecosystems” – the definition given in a publication called “Caring for the Earth: A Strategy for Sustainable Living” by the International Union for Conservation of Nature (IUCN), the United Nations Environment Programme and the World Wide Fund for Nature (1991).

# 1 BACKGROUND AND INTRODUCTION

The Namibian Ports Authority, Namport, invited bids for the development and operations of a common user manganese export terminal (CUMET) in the Port of Lüderitz (Figure 1-1). The terminal will receive manganese ore from mines located in the Northern Cape of South Africa and will be responsible for the temporary stockpiling and subsequent loading of the ore onto vessels berthed in the Port of Lüderitz. Through this development, the Port of Lüderitz will be boosted as a reliable and efficient port of choice for the export of manganese ore from southern Africa to international clients. Lüderitz Bay Shipping and Forwarding (Pty) Ltd (the Proponent) was awarded the bid and is currently in the planning phase of the project.

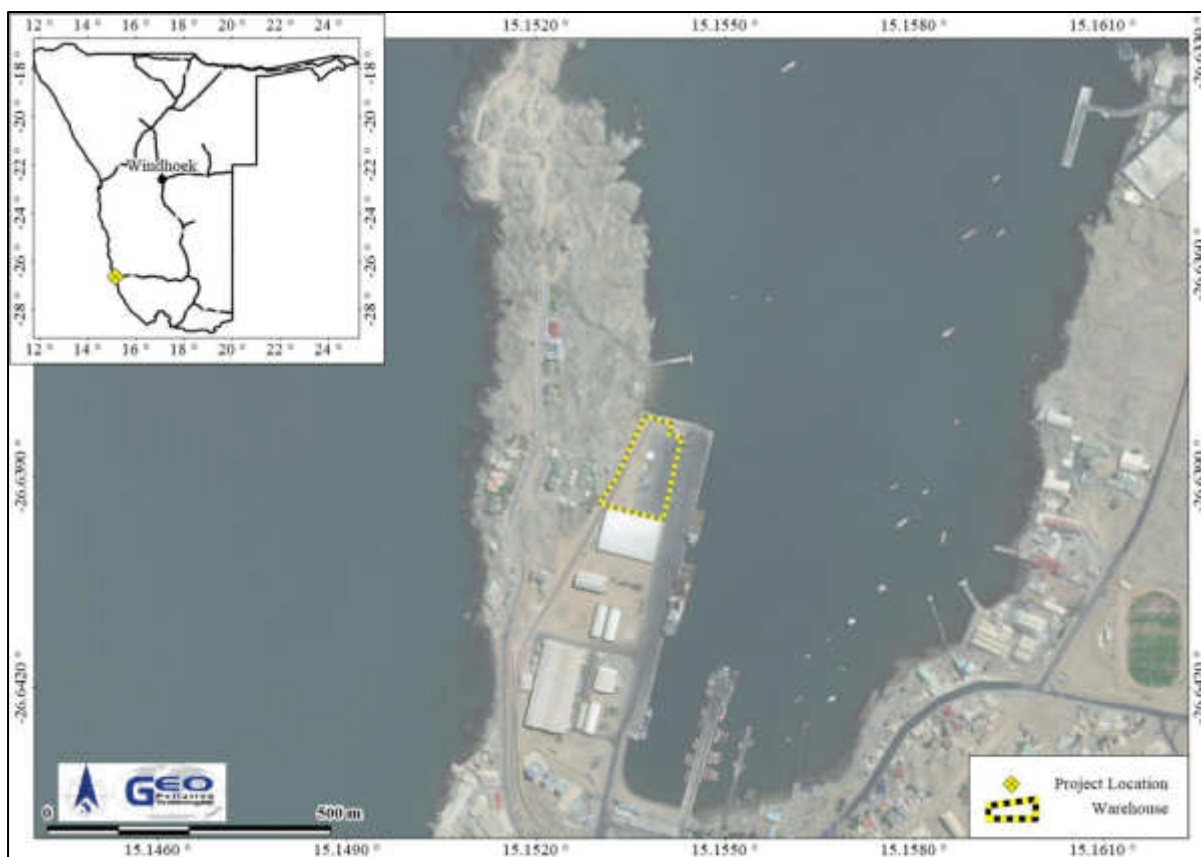
As part of the planning phase, the Proponent initiated an environmental impact assessment (EIA) process with the aim of obtaining an environmental clearance certificate (ECC) for the proposed CUMET project. Geo Pollution Technologies (Pty) Ltd was appointed to draft an environmental scoping report and environmental management plan (EMP) for the development and operations of the CUMET project. The environmental assessment was conducted in compliance with Namibia's Environmental Management Act (Act No 7 of 2007). Aspects of the development that forms part of the environmental assessment includes all activities that will take place within port bounds. That is arrival of a truck or train at the port, offloading of manganese ore within a purpose built warehouse for stockpiling, loading of a barge (or transshipment vessels) berthed at the quay wall, and all administrative and ancillary tasks required for efficient and reliable operations.

A risk assessment was undertaken to determine the potential impacts of the construction, operational and possible decommissioning phases associated with the project on the environment. 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".

**Project Justification** –Namport, through the operations of the ports they manage, aims at being the key provider of port services on the southwestern coast of Africa. Furthermore, the Walvis Bay Corridor Group aims at developing and promoting Namibia as the leading trade route for the Southern African Development Community (SADC). Namibia, and specifically the Port of Lüderitz, is ideally placed to serve as an export location for manganese ore originating from the Northern Cape of South Africa. In addition, the challenges faced in terms of logistics and transport of such ore in South Africa, further promote Namibia as favourable export avenue. Should the current project realise, the volume of manganese ore exported via Lüderitz will increase and the port operations related to this, will occur within a much better regulated and controlled environment. Direct benefits of the project will include:

- ◆ Optimisation of the Port of Lüderitz.
- ◆ Infrastructure development and thus development of Lüderitz as a whole.
- ◆ Support for the local and regional construction industry during construction and maintenance of the warehouse and related infrastructure such as conveyors, dust suppression systems, etc.
- ◆ New employment opportunities during the operational phase for the operations of the warehouse and related services.
- ◆ Support of the local and regional business for the provision of goods and services.
- ◆ Overall increase in economic resilience of the town and region and opportunities for additional investments.
- ◆ Increase in revenue generated and contribution to the national treasury.

Indirect benefits will reach the entire country and is specifically linked to the transport of the ore up to the Port of Lüderitz.



**Figure 1-1. Project location**

## 2 SCOPE

The scope of the environmental assessment is to:

1. Determine the potential environmental impacts emanating from the proposed activities.
2. Identify a range of management actions which could mitigate the potential adverse impacts to acceptable levels.
3. Comply with Namibia's Environmental Management Act (2007).
4. Provide sufficient information to the Ministry of Environment, Forestry and Tourism and related authorities to make an informed decision regarding the proposed operations, construction activities and possible decommissioning of the facility.

## 3 METHODOLOGY

The following methods were used to investigate the potential impacts on the social and natural environment due to the operations of the facility:

1. Baseline information about the site and its surroundings was obtained from existing secondary information as well as from primary information obtained during a reconnaissance site visit.
2. As part of the scoping process to determine potential environmental impacts, interested and affected parties (IAPs) were consulted about their views, comments and opinions and these are put forward in this report.
3. Based on gathered information and public and stakeholder consultation, an assessment of potential impacts was conducted and a management plan prepared.

## 4 DEVELOPMENT AND OPERATIONS

The entire development, as is covered in this assessment, falls within the property boundaries of the Port of Lüderitz (landside) and within port limits (seaside). The following sections provides background to the project and details on the proposed development and operations of the CUMET project.

#### **4.1 BACKGROUND TO THE PROJECT**

Namport wishes to optimize the Port of Lüderitz's cargo handling capacity. The port is limited in its capacity for handling cargo, by limited availability of: undeveloped port land; and by shallow water depth in the port. Since there is a significant demand for port services related to the export of manganese ore from southern Africa, Namport decided to procure a tenant that will focus entirely on the optimized receipt and export of manganese ore.

As mentioned, one of the major limiting factors of the Port of Lüderitz is water depth, and due to hard bedrock, deepening of the port is currently not feasible. The current water depth at the quay wall is -8.15 mCD and this limits shipments to 30,000 tons per shipment or approximately 650,000 tons per year. The CUMET project has to implement two main aspects to increase the annual shipments by two or even three fold. These are: 1) more efficient loading of vessels berthed in the port; 2) transshipment of ore in the Port of Lüderitz anchorage area from a small barge to a large Post-Panamax or Mini-Cape size mother vessel.

Bidders were thus invited to bid for the development and operations of the Port of Lüderitz CUMET. Various conditions were coupled to the bid and among others, some of the important ones were that only manganese ore will be handled at the CUMET; ore must be stockpiled within an enclosed warehouse from which dust may not escape, at least 16,000 tons of ore must be loaded from the warehouse per day, and the CUMET must receive ore indiscriminately from any potential party who wishes to export manganese ore through the facility, as long as it is in accordance with Namport's conditions.

As successful bidder, the Proponent will thus be the developer and operator (tenant) of the CUMET, while Namport will remain the landlord. The site earmarked for the development, is the current container terminal site which covers approximately 12,000 m<sup>2</sup>. A warehouse to stockpile at least 135,000 tons of ore must be constructed on this site. The entire project must be approached within strict environmental parameters and during the bidding process, bidders had to already have independent environmental assessment practitioners involved and had to demonstrate the environmental impact assessment process that they intend to follow. These had to be to the satisfaction of Namport in order to be considered for the project.

#### **4.2 OVERVIEW OF VARIOUS COMPONENTS AT PLAY**

While the current environmental assessment only covers all port bound activities, a brief overview is provided here of all the different stages of operations. Those aspects occurring outside of port boundaries must, where applicable, have their own environmental assessments, with related EMPs and ECCs.

##### **4.2.1 The Ore Reserves**

South Africa hosts the world's largest known land-based manganese metal reserve (Beukes et al., 2016). This reserve, of approximately 4,200 megatons (Mt), is found in the Kalahari Manganese Field in the Northern Cape, and comprises an estimated 77% share of the total global reserves. South Africa is responsible for approximately a third of the world's production of manganese ore at 6.2 million tonnes per year. Manganese ore is currently mainly exported via the Port Elisabeth and Saldanha Bay harbours, or processed into metals and ferroalloys at processing plants in South Africa. To continuously export manganese ore at the current volumes, or attempt to increase the volumes, is made progressively more difficult by the congestion of these harbours, and some serious logistical difficulties with road and rail transport in South Africa.

##### **4.2.2 Ore Transport**

Manganese ore is typically transported as nuggets varying between 3 and 10 cm in diameter. It can be transported by road or rail and as bulk, break-bulk (1 ton bulk bags) or containerised cargo, each method having its own advantages and disadvantages.

Rail transport has the advantage of being able to move large volumes of ore, off of the roads used by the general public. In southern Namibia, rail transport is made difficult by the fact

that there is no uninterrupted rail line between the manganese ore mines and Lüderitz as well as by a lack of maintenance on the rail, a shortage of rolling stock, the steep descent into Lüderitz and by frequent covering of the rail line with sand, near Lüderitz.

Road transport of ore is much more reliable, although congestion at the South Africa-Namibia border is currently problematic. The increased number of trucks on the roads increases road congestion and deterioration, but does contribute significantly to road maintenance funds through road taxes and levies. Should a critical point be reached in terms of the number of trucks that need to use the roads, it may become feasible to do significant upgrades on the main transport routes.

Containerised and break-bulk transport of ore is favourable in terms of limiting dust, but comes with increased expense, increased handling time, and reduced payloads. Bulk transport is preferred in terms of simplicity of transport, but requires loads to be covered to prevent the fly-off of dust during transport.

#### **4.2.3 Truck-Staging Area**

A continuous reliable supply of ore to the port is required. The impacts of trucks on traffic in Lüderitz should be minimized as far as is practically possible. For example, trucks should not form queues within Lüderitz, while waiting to enter the port. To achieve this, a truck-staging area will be developed on the outskirts of Lüderitz. The purpose of the staging area will be to act as a buffer to regulate truck traffic through Lüderitz and to minimize truck impacts during peak traffic hours, as much as possible. Incoming trucks will thus report to and wait at the staging area. From here they will then be released at timed intervals. Trucks will also be weighed in and out at the truck-staging area.

#### **4.2.4 Port Activities**

Trucks and/or trains will enter the Port of Lüderitz according to standard port procedures as managed by Namport. They will advance to the newly constructed CUMET where they will offload the ore before proceeding out of the port. The ore will be temporarily stockpiled in the warehouse. Once a barge berths (docs) at the quay, it will be loaded from the warehouse. Loading can be performed, for example, with skips or conveyors, but ultimately, it must be an effective enough process to be able to load 16,000 tons of ore per day at minimum, without causing significant environmental impacts.

#### **4.2.5 Transshipment**

The barges will be used to move ore from the harbour to a large vessel anchored within the anchorage area of the Port of Lüderitz. Barges will enter the port according to standard port procedures and according to time allocations as arranged with the port captain on a “first come, first served” basis. Once the barge is fully loaded, it will proceed to the anchored “mother vessel” where transshipment will take place. Transshipment will be by means of transshipment vessels and / or barges with floating cranes. A separate EIA is being conducted by EnviroLeap Consulting CC for the transshipment phase of the development.

### **4.3 THE CUMET**

The main focus of this EIA is the warehouse and barge loading component of the CUMET. It includes the planning, development (construction) and operational phases.

#### **4.3.1 Warehouse Construction**

A new, dedicated manganese ore warehouse will be constructed. Namport prescribed a minimum holding capacity of 135,000 tons of ore, but the Proponent will construct the warehouse to have sufficient capacity to store an estimated 158,000 tons. It will cover approximately 12,000 m<sup>2</sup>. The warehouse will be constructed to allow for a stockpile height of about 8.9 m. It will have four to five different bays so that ore of different grades, and for different customers, can be segregated. It will be built to accommodate separate truck entry- and exit points into and out of the warehouse.



A dust suppression system, consisting of a blower or mobile misting system, will be installed to reduce dust plumes / excessive dust within the warehouse. Although the ore is not flammable, a fire detection system will be installed. Fire extinguishers will be placed throughout the warehouse. The barge loading system, comprising a belt loading system, will partially be established within the warehouse (Figure 4-1). Apart from these structures, the only other facility inside the warehouse will be an ablution facility.

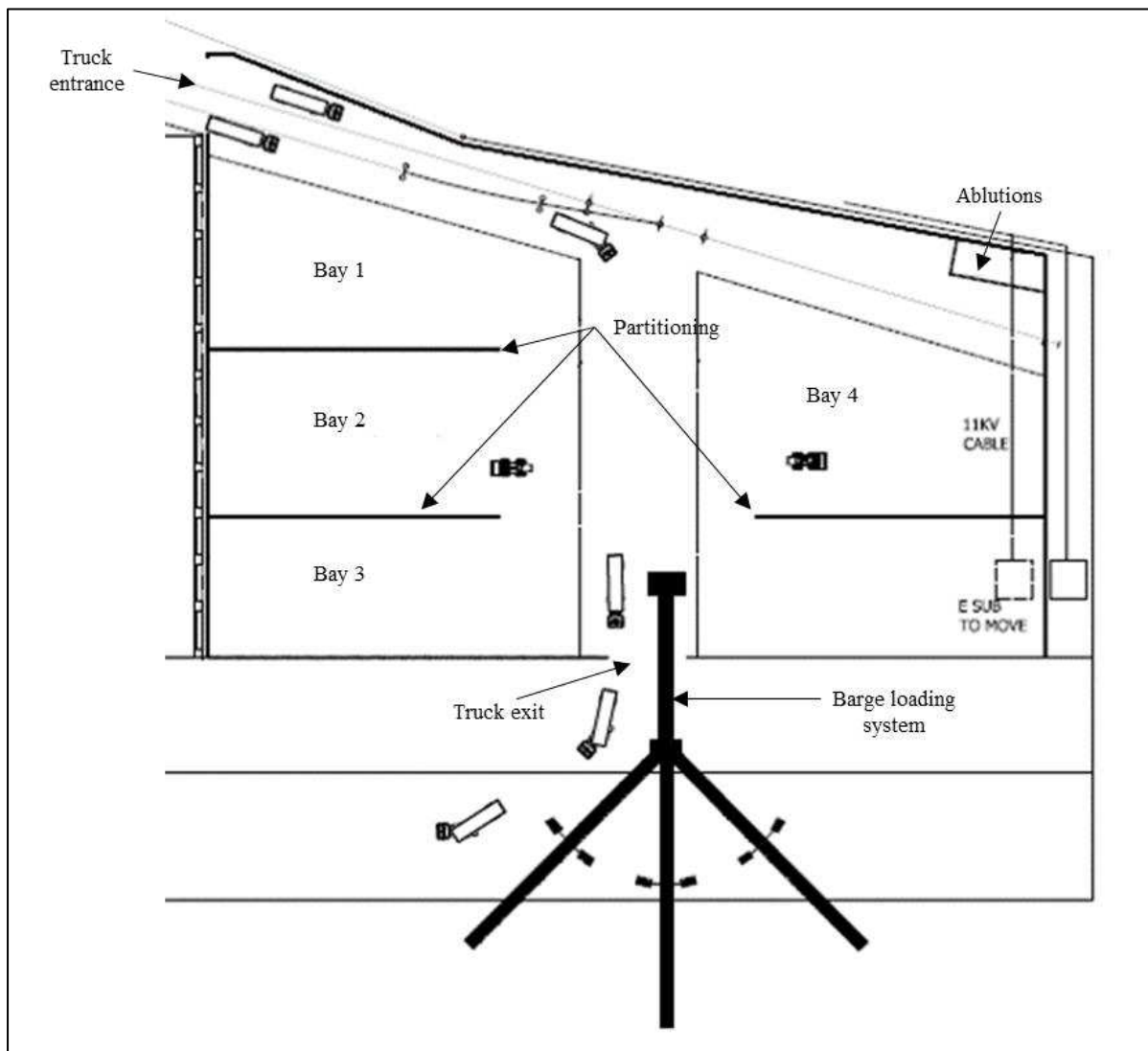
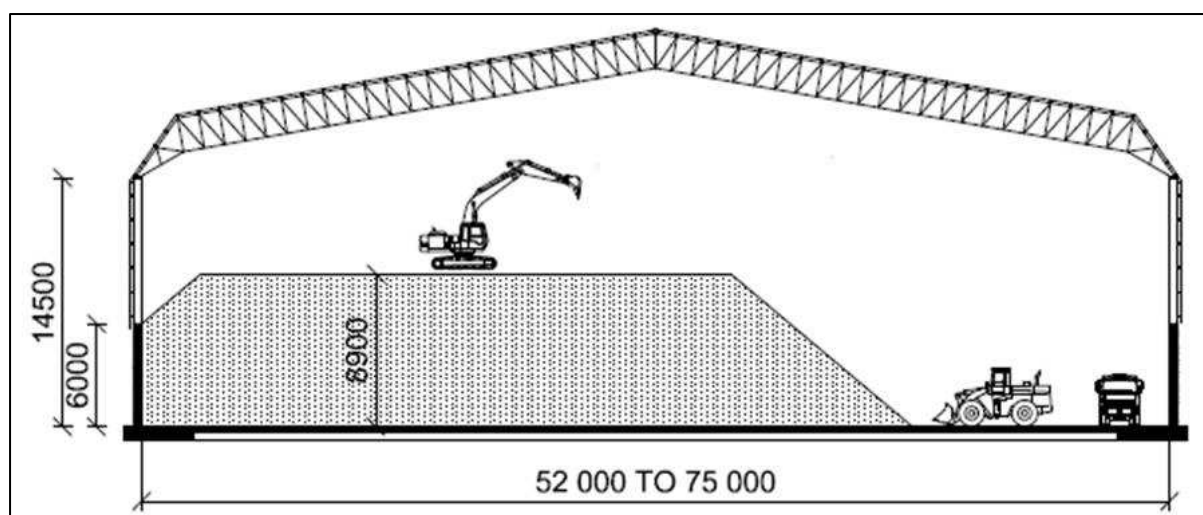


Figure 4-1. Proposed warehouse layout

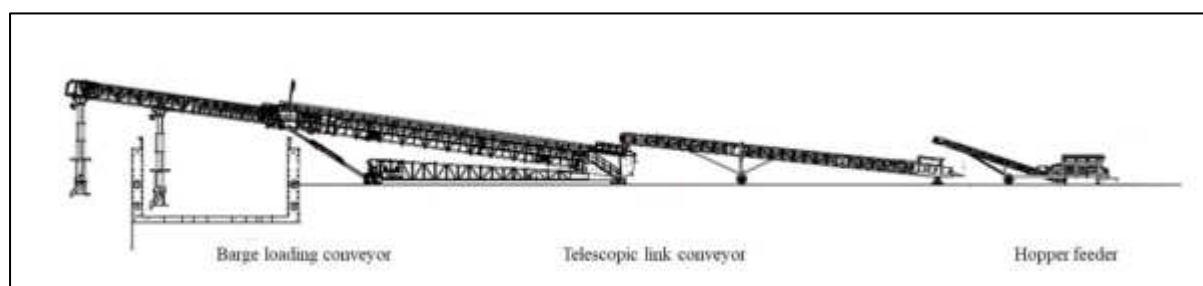


**Figure 4-2. Warehouse section**

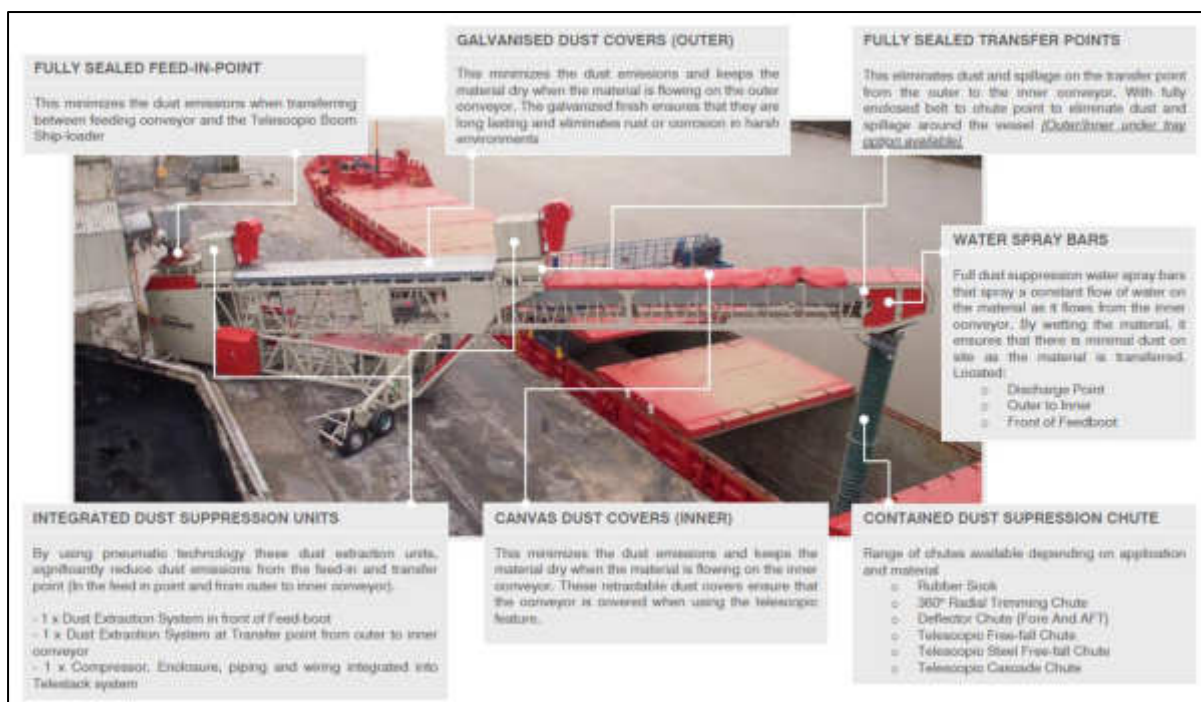
### 4.3.2 Vessel Loading

Initially the barges will be loaded with skips. This will be an interim operation until a belt loading system comes into operation. Skips on a flatbed truck will be loaded with ore, inside the warehouse with front-end loaders. The truck will then proceed to the quay side where skips will be lifted with port cranes and lowered into the barge. When the skip rests on the tank top (or previously loaded ore), the fastening chains on one end releases and the skip is lifted from the barge, leaving the ore behind. The skip is then placed on a noise dampening and protective layer (e.g. a rubber mat) on the quay. A forklift lifts it back onto the truck and it returns to the warehouse to be reloaded.

The planned belt loading system is a conveyor system consisting of three sections: 1) a hopper feeder; 2) a telescopic link conveyor; and 3) a barge loading conveyor. The system will be designed to deliver more than 750 tons per hour to the barge. The hopper feeder will be fed with manganese ore inside the warehouse with front-end loaders. From the hopper a short section of conveyor will transport the ore onto the telescopic link conveyor. The latter section of the system can be moved from side to side in order to fill different sections of the barge. It will transfer the ore to the barge loading conveyor which has a chute to deliver the ore as low as possible into the barge, thereby reducing dust impacts that would result if ore is dropped from a height. The entire loading system will be enclosed and sealed to prevent the escape of dust. In addition, water spray bars or dust filters will be installed to wet ore to further prevent any dust from escaping from the system. An example of such a system is provided in Figure 4-4.



**Figure 4-3. Conveyor loading system main components**



**Figure 4-4. Example of the loading system with some of the dust suppression systems to be used**

### 4.3.3 CUMET Operations

Current manganese ore exports via the Port of Lüderitz total 720,000 tons per annum. Once the CUMET is fully operational, the total envisioned volume to be exported is 2,200,000 tons per annum. Using normal trucks, and given 300 operational days, the current truck traffic equals 67 trucks per day making deliveries. Operating at full capacity, this will increase to 204 trucks per day. However, ultimately the trucking of ore must also be optimized and this can be achieved by converting to a road traffic management system (RTMS) with purpose built vehicles. With a 50% RTMS conversion the number of trucks will decrease to 172 trucks per day, and with 100% RTMS conversion 141 trucks per day will be achieved. With the latter 100% RTMS conversion, the volume of ore can be tripled, while only doubling the amount of trucks required to move the ore.

As mentioned, a truck-staging area will be required on the outskirts of Lüderitz. While this falls outside the scope of the current assessment, the Proponent will have to work closely with the operator of the truck-staging area. The purpose of the truck staging area will be to allow trucks to wait in a dedicated area, off of the roads, until such time as it is released to proceed to the port. In this way, trucks will only be allowed to proceed to the port at regular, predetermined intervals, thus preventing long queues of trucks moving through town and impacting on regular traffic. The proposed system will also allow for the halting of operations in the event of road closures in town or within the port (e.g. broken vehicles or accidents), which could lead to traffic congestion.

Once at the port, trucks will proceed on the western side of the port, next to the railway line, up to the western entrance to the warehouse. The warehouse doors will be opened, the truck enters and the doors are closed. Once inside, the load is delivered by tipping, a process that takes about 5 minutes using RTMS trucks, after which the exit door is opened and the truck departs, following a route out on the quay side of the port. Only when the exit door is closed, will the next truck be allowed to enter.

As ore is delivered, front-end loaders and excavators will be employed to move the ore into the respective bays for stockpiling. When a barge is being filled, front-end loaders will be used to fill the hopper with ore. Three front-end loaders and two excavators will be operational in the warehouse.

Dust suppression will continuously be conducted inside the warehouse to prevent any fugitive dust inside and outside the warehouse to ensure safety of all workers and the public and environment in general. This will be especially important during periods of strong winds.

For barge loading, the hopper is continuously fed with ore and it delivers the ore to the telescopic link conveyor. The telescopic link conveyor feeds the barge loader, which is continuously repositioned to fill different areas of the barge, in a systematic approach. The chute at the end of the barge loading conveyor is lowered into the barge in order to release the ore as close as possible to the tank top, or cargo already in the hold, in order to minimize dust. Once the barge is full, it will depart for the transshipment process to be conducted in the anchorage area.

If the export target volume of 2,200,000 tons is reached, a barge will occupy the berth for 12 days per month. In this way a Post-Panamax bulk carrier of with a 92,000 ton capacity will be loaded twice per month.

The CUMET terminal will employ 64 full-time permanent staff while 15 part-time stevedoring jobs will be created during ship loading. In addition, the trucking of the ore and the truck staging area will create a significant number of employment business opportunities.

The Proponent is ISO 9001 (quality management system) and ISO 45001 (occupational health & safety management system) certified and will strive to implement these standards at the CUMET facility. To continue being certified, these standards call for regular internal audits and assessments and corrective action where necessary.

#### 4.3.4 Interim Options

Due to the scale and magnitude of the proposed project, it may require a phased approach with interim methods and procedures to be implemented until the development is complete. Interim options include the following:

- ◆ Regular trucks will be used to transport ore into the port until the conversion to RTMS is complete.
- ◆ An interim warehouse may be used to stockpile ore until the new warehouse is complete and operational.
- ◆ Loading of barges with skips, similar to the current operations, until the warehouse with loading system is complete and operational.



**Photo 4-1. Proposed warehouse area**



**Photo 4-2. Rail siding to future warehouse**



Photo 4-3. View of quay from north to south

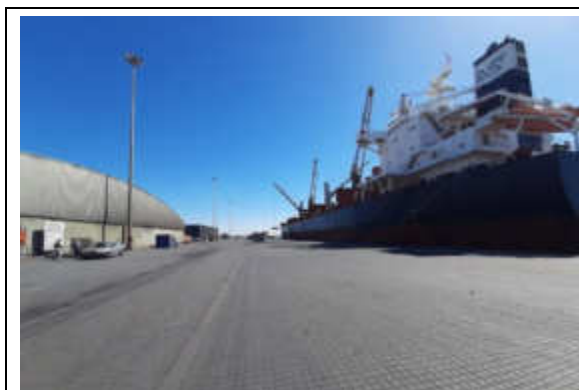


Photo 4-4. View of quay from south to north

## 5 ALTERNATIVES

As part of planning for the project, various alternatives are considered. These include location, infrastructure and operational alternatives. Since the project is a Namport initiative, no alternative location for construction of the warehouse is considered. The main alternatives considered relates to the means of storage and the means of loading. These are compared in Table 5-1.

**Table 5-1. Alternatives**

Alternatives	Advantages	Disadvantages	Preferred Option
<b>Means of Storage</b>			
Open stockpile	<ul style="list-style-type: none"> <li>◆ Can commence immediately</li> <li>◆ No expensive start-up costs</li> </ul>	<ul style="list-style-type: none"> <li>◆ Difficult to contain / suppress dust especially in windy conditions</li> <li>◆ Increased chance for marine impacts due to runoff from the quay side and due to windblown dust</li> </ul>	◆ Fully enclosed warehouse
Enclosed Warehouse	<ul style="list-style-type: none"> <li>◆ Very good dust containment</li> <li>◆ Better environmental protection</li> </ul>	<ul style="list-style-type: none"> <li>◆ Expensive warehouse infrastructure</li> <li>◆ Significant time required to construct the warehouse may delay the project</li> </ul>	
<b>Means of Barge Loading</b>			
Skip Loading	<ul style="list-style-type: none"> <li>◆ Less expensive infrastructure</li> <li>◆ Infrastructure already in place</li> </ul>	<ul style="list-style-type: none"> <li>◆ Noisy</li> <li>◆ Increased traffic on quay to transport skips</li> </ul>	◆ Commence with skip loading, but switch to belt loading as soon as infrastructure is in place
Belt Loading (Conveyor)	<ul style="list-style-type: none"> <li>◆ Faster loading operations</li> <li>◆ Operations less noisy</li> <li>◆ Good dust suppression / containment built into loading system</li> <li>◆ Less traffic on quayside</li> </ul>	<ul style="list-style-type: none"> <li>◆ Expensive</li> <li>◆ Delays expected in commissioning of belt system</li> </ul>	

## 5.1 NO-GO OPTION

The Port of Lüderitz has long been identified as a key National asset to be developed. As such, in more recent years, the port has allowed the export of manganese ore through its facility. Operations related to the shipment of manganese is existing. The proposed project, as developed by Namport, aims at establishing better infrastructure to facilitate such operations while also increasing environmental safeguards related to the activity. Should the project not receive the environmental clearance certificate, there would be a significant loss in possible capital investment since the foreign investment into the project may exceed millions of Namibian dollars. There will further be a loss in investor's confidence in Namibia as existing operations were identified by the Namibian Government to fall within an area for growth, investment and development, specifically in the transport and logistics sector. Also of significant importance is that a number of workers will not be employed. Finally, revenue generated for Namibia will be reduced. The biophysical attributes of the port area allow for limited alternative uses. Not continuing with the project may see the land utilised for significantly less profitable, more environmentally degrading operations.

## 6 ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS

To protect the environment and achieve sustainable development, all projects, plans, programmes and policies deemed to have adverse impacts on the environment require an environmental assessment, as per the Namibian legislation. The legislation and standards provided in Table 6-1 to Table 6-3 govern the environmental assessment process in Namibia and/or are relevant to the facility.

**Table 6-1. Namibian law applicable to the facility and related operations**

Law	Key Aspects
<b>The Namibian Constitution</b>	<ul style="list-style-type: none"> <li>◆ Promote the welfare of people</li> <li>◆ Incorporates a high level of environmental protection</li> <li>◆ Incorporates international agreements as part of Namibian law</li> </ul>
<b>Environmental Management Act</b> Act No. 7 of 2007, Government Notice No. 232 of 2007	<ul style="list-style-type: none"> <li>◆ Defines the environment</li> <li>◆ Promote sustainable management of the environment and the use of natural resources</li> <li>◆ Provide a process of assessment and control of activities with possible significant effects on the environment</li> </ul>
<b>Environmental Management Act Regulations</b> Government Notice No. 28-30 of 2012	<ul style="list-style-type: none"> <li>◆ Commencement of the Environmental Management Act</li> <li>◆ List activities that requires an environmental clearance certificate</li> <li>◆ Provide Environmental Impact Assessment Regulations</li> </ul>
<b>Namibia Ports Authority Act</b> Act No. 2 of 1994, Government Notice No. 30	<ul style="list-style-type: none"> <li>◆ Provides for the establishment of the Namibian Ports Authority to undertake the management and control of ports</li> </ul>
<b>Local Authorities Act</b> Act No. 23 of 1992, Government Notice No. 116 of 1992	<ul style="list-style-type: none"> <li>◆ Define the powers, duties and functions of local authority councils</li> <li>◆ Regulates discharges into sewers</li> </ul>
<b>Public Health Act</b> Act No. 36 of 1919	<ul style="list-style-type: none"> <li>◆ Provides for the protection of health of all people</li> </ul>

Law	Key Aspects
<p><b>Public and Environmental Health Act</b> Act No. 1 of 2015, Government Notice No. 86 of 2015</p>	<ul style="list-style-type: none"> <li>◆ Provides a framework for a structured more uniform public and environmental health system, and for incidental matters</li> <li>◆ Deals with Integrated Waste Management including waste collection disposal and recycling; waste generation and storage; and sanitation.</li> </ul>
<p><b>Atomic Energy and Radiation Protection Act</b> Act No. 5 of 2005, Government Notice No. 50 of 2005</p>	<ul style="list-style-type: none"> <li>◆ 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.</li> <li>◆ 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</li> <li>◆ Provides for regulations (Government Notice No. 221 of 2011) with regard to radiation protection and waste disposal.</li> </ul>
<p><b>Labour Act</b> Act No 11 of 2007, Government Notice No. 236 of 2007</p>	<ul style="list-style-type: none"> <li>◆ Provides for Labour Law and the protection and safety of employees</li> <li>◆ Labour Act, 1992: Regulations relating to the health and safety of employees at work (Government Notice No. 156 of 1997) <ul style="list-style-type: none"> <li>○ "hazardous substance" means any toxic, harmful, corrosive or irritant substance, which is -</li> <li>○ (a) a substance for which an occupational exposure limit is prescribed and any other substance not so listed which by reason of its characteristic properties create a risk to the health of any person</li> <li>○ (c) dust of any kind, if present at a substantial concentration in air</li> <li>○ Provides exposure limits for dust and fumes</li> </ul> </li> </ul>
<p><b>National Heritage Act of Namibia</b> Act No. 27 of 2004</p>	<ul style="list-style-type: none"> <li>◆ Provides for the protection and conservation of places and objects of heritage significance and the registration of such places and objects</li> <li>◆ 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.</li> <li>◆ Provides for reporting of heritage finds, issuing of permits, and archaeological impact assessments.</li> </ul>
<p><b>The National Monuments Act of Namibia</b> Act No. 28 of 1969</p>	<ul style="list-style-type: none"> <li>◆ No person shall destroy, damage, excavate, alter, remove from its original site or export from Namibia: <ul style="list-style-type: none"> <li>a) any meteorite or fossil; or</li> <li>b) any drawing or painting on stone or a petroglyph known or commonly believed to have been executed by any people who inhabited or visited Namibia before the year 1900 AD; or</li> <li>c) any implement, ornament or structure known or commonly believed to have been used as a mace, used or erected by people referred to in paragraph (b); or</li> <li>d) the anthropological or archaeological contents of graves, caves, rock shelters, middens, shell mounds or other sites used by such people; or</li> </ul> </li> </ul>

Law	Key Aspects
	e) any other archaeological or paleontological finds, material or object; except under the authority of and in accordance with a permit issued under this section.
<b>Territorial Sea and Exclusive Economic Zone of Namibia Act</b> Act No. 3 of 1990, Government Notice No. 28	<ul style="list-style-type: none"> <li>◆ Determine and define the territorial sea, internal waters, contiguous zone, exclusive economic zone and continental shelf of Namibia</li> </ul>
<b>Marine Resources Act</b> Act No. 27 of 2000, Government Notice No. 292	<ul style="list-style-type: none"> <li>◆ Provide for the conservation of the marine ecosystem and the responsible administration, conservation, protection and promotion of marine resources on a sustainable basis</li> <li>◆ Under this act the following were determined:               <ul style="list-style-type: none"> <li>• Regulations relating to the exploitation of marine resources (2001)</li> <li>• Declaration of the Namibian Islands' Marine Protected Area: Marine Resources Act (2009)</li> <li>• Regulations relating to Namibian Islands' Marine Protected Area: Marine Resources Act, 2000 (2012)</li> </ul> </li> </ul>
<b>Dumping At Sea Control Act</b> Act No. 73 of 1980, Government Notice No. 1149	<ul style="list-style-type: none"> <li>◆ Provide for the control of dumping of substances in the sea</li> <li>◆ Provides for permits to be issued to allow dumping at sea of scheduled substances</li> </ul>
<b>Water Resources Management Act</b> Act No. 11 of 2013, Government Notice No. 284	<ul style="list-style-type: none"> <li>◆ Provide for management, protection, development, use and conservation of water resources</li> <li>◆ Prevention of water pollution and assignment of liability</li> <li>◆ Not in force yet</li> </ul>
<b>Aquaculture Act</b> Act No. 18 of 2002, Government Notice No. 231	<ul style="list-style-type: none"> <li>◆ Provides for water quality monitoring to protect aquaculture activities</li> </ul>
<b>Atmospheric Pollution Prevention Ordinance</b> Ordinance No. 11 of 1976	<ul style="list-style-type: none"> <li>◆ Governs the control of noxious or offensive gases</li> <li>◆ Prohibits scheduled process without a registration certificate in a controlled area</li> <li>◆ Requires best practical means for preventing or reducing the escape into the atmosphere of noxious or offensive gases produced by the scheduled process</li> </ul>
<b>Hazardous Substances Ordinance</b> Ordinance No. 14 of 1974	<ul style="list-style-type: none"> <li>◆ Applies to the manufacture, sale, use, disposal and dumping of hazardous substances as well as their import and export</li> <li>◆ Aims to prevent hazardous substances from causing injury, ill-health or the death of human beings</li> </ul>
<b>Marine Traffic Act</b> Act No. 2 of 1981, Government Notice No. 282	<ul style="list-style-type: none"> <li>◆ Regulate marine traffic in Namibia</li> </ul>
<b>Prevention and Combating of Pollution of the Sea by Oil Act</b> Act No. 6 of 1981, Government Notice No. 342	<ul style="list-style-type: none"> <li>◆ Provides for the prevention of pollution of the sea where oil is being or is likely to be discharged</li> </ul>
<b>Prevention and Combating of Pollution of the Sea by Oil Amendment Act</b> Act No. 24 of 1991, Government Notice No. 150	<ul style="list-style-type: none"> <li>◆ Amends the Prevention and Combating of Pollution of the Sea by Oil Act of 1981 to be more relevant to Namibia after independence</li> </ul>



<b>Law</b>	<b>Key Aspects</b>
<b>Pollution Control and Waste Management Bill</b> (draft document)	<ul style="list-style-type: none"> <li>◆ Not in force yet</li> <li>◆ Provides for prevention and control of pollution and waste</li> <li>◆ Provides for procedures to be followed for licence applications</li> </ul>
<b>Draft Wetland Policy of 2003</b>	<ul style="list-style-type: none"> <li>◆ Considering Radford Bay and Second Lagoon, the Wetland Policy of 2003 is of importance and includes:</li> <li>◆ Protection and Conservation of wetlands and ecosystems.</li> </ul>
<b>Integrated Coastal Zone Management Bill (2014)</b>	<ul style="list-style-type: none"> <li>◆ Aims at coastal management and give effect to Namibia's obligations in terms of international law regulating coastal management</li> <li>◆ Not adopted yet</li> </ul>
<b>Road Traffic and Transport Act</b> Act No. 52 of 1999 Government Notice No. 282 of 1999	<ul style="list-style-type: none"> <li>◆ Provides for the control of traffic on public roads and the regulations pertaining to road transport</li> </ul>
<b>Road Traffic and Transport Regulations</b> Government Notice No 53 of 2001	<ul style="list-style-type: none"> <li>◆ 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</li> </ul>

**Table 6-2. Relevant multilateral environmental agreements for Namibia and the development**

<b>Agreement</b>	<b>Key Aspects</b>
<b>Stockholm Declaration on the Human Environment, Stockholm 1972</b>	<ul style="list-style-type: none"> <li>◆ 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.</li> </ul>
<b>Stockholm Declaration on the Human Environment, Stockholm 1972</b>	<ul style="list-style-type: none"> <li>◆ 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</li> </ul>
<b>1985 Vienna Convention for the Protection of the Ozone Layer</b>	<ul style="list-style-type: none"> <li>◆ Aims to protect human health and the environment against adverse effects from modification of the Ozone Layer are considered</li> <li>◆ Adopted to regulate levels of greenhouse gas concentration in the atmosphere.</li> </ul>
<b>United Nations Framework Convention on Climate Change (UNFCCC)</b>	<ul style="list-style-type: none"> <li>◆ The Convention recognises that developing countries should be accorded appropriate assistance to enable them to fulfil the terms of the Convention.</li> </ul>
<b>Convention on Biological Diversity, Rio de Janeiro, 1992</b>	<ul style="list-style-type: none"> <li>◆ Under article 14 of The Convention, EIAs must be conducted for projects that may negatively affect biological diversity.</li> </ul>
<b>Benguela Current Convention of 2013</b>	<ul style="list-style-type: none"> <li>◆ The Convention is a formal treaty between the governments of Angola, Namibia and South Africa that sets out the countries' intention "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."</li> </ul>

<b>Agreement</b>	<b>Key Aspects</b>
<b>International Convention on Oil Pollution Preparedness, Response and Cooperation of 1990</b>	<ul style="list-style-type: none"> <li>◆ International maritime convention establishing measures for dealing with marine oil pollution incidents nationally and in co-operation with other countries.</li> </ul>
<b>National Marine Pollution Contingency Plan of 2017</b>	<ul style="list-style-type: none"> <li>◆ Coordinated and integrated national system for dealing with oil spills in Namibian waters.</li> </ul>
<b>United Nations Convention for the Prevention of Marine Pollution from Land-based Sources</b>	<ul style="list-style-type: none"> <li>◆ Concerns itself with the protection of marine fauna and flora by preventing marine pollution from land-based sources.</li> <li>◆ 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.</li> </ul>
<b>Abidjan Convention of 1981</b>	<ul style="list-style-type: none"> <li>◆ 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</li> <li>◆ Provides an overarching legal framework for all marine-related programmes in West, Central and Southern Africa.</li> </ul>
<b>International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)</b>	<ul style="list-style-type: none"> <li>◆ Dealing with the prevention of pollution of the sea by oil, sewage and garbage from ships.</li> </ul>
<b>United Nations Convention on the Law of the Sea</b>	<ul style="list-style-type: none"> <li>◆ Namibia is obligated to protect and preserve the marine environment.</li> <li>◆ Includes the prevention, reduction and control of pollution of the marine environment.</li> </ul>
<b>Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter (London Convention, 1972)</b>	<ul style="list-style-type: none"> <li>◆ Aims at controlling and preventing marine pollution.</li> </ul>
<b>IMO Guidelines on Marine Security: International Ship and Port Facility Security (ISPS) Code</b>	<ul style="list-style-type: none"> <li>◆ Legislative framework for maritime security issues.</li> <li>◆ Aimed at Government, Port Authorities and shipping companies.</li> </ul>
<b>IMO Biofouling Guidelines</b>	<ul style="list-style-type: none"> <li>◆ Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species</li> </ul>

**Table 6-3. Standards or codes of practise**

<b>Standard or Code</b>	<b>Key Aspects</b>
<b>Namport Specifications and Legislation</b>	<ul style="list-style-type: none"> <li>◆ Enforced Standards and Codes which governs construction and operations relating to the port, and associated cargo handling.</li> <li>◆ Environmental management plan for the Port of Lüderitz</li> <li>◆ Emergency response plan</li> </ul>
<b>International Maritime Dangerous Goods Code (IMDG Version 10 of 2010)</b>	<ul style="list-style-type: none"> <li>◆ Prescribed by Namport for handling and storage of dangerous cargo</li> </ul>
<b>International Maritime Solid Bulk Cargoes Code (IMSBC Code)</b>	<ul style="list-style-type: none"> <li>◆ Provides information on safe stowage and shipment of solid bulk cargoes</li> </ul>

Standard or Code	Key Aspects
	<ul style="list-style-type: none"> <li>◆ Provide information on the dangers associated with, and procedures to be adopted for, the shipment of certain types of solid bulk cargoes including manganese ore and manganese fines</li> </ul>

No listed activities as per the Environmental Management Act is triggered by the proposed project per se. The only Namibian legislation pertaining to manganese is the Namibian Labour Act's regulations that provides a time weighted average exposure limit of 5 mg/m<sup>3</sup> manganese dust and its compounds (as manganese) for workers. Furthermore, any dust that may be present in air in a substantial amount is considered in the Labour Act regulations as a "hazardous substance".

The Road Traffic and Transport Act Regulations regulate transport in general. This pertains mainly to axel loads and covering of all loads to prevent fly-off. Namport does not have specific in-house legislation pertaining to manganese ore, but does have a number of procedures, policies and plans in place that governs operations in port and make provision for fines to be issued in the event of non-compliance or pollution (refer to the EMP for the Port of Lüderitz). Apart from Namport's own policies and procedures, Namport subscribes and adheres to various international agreements, standards and protocols that include the handling of cargo. Among these are the International Maritime Solid Bulk Cargoes Code (IMSBC Code) as listed in Table 6-3. The IMSBC Code's information on manganese ore states that it is not a hazardous material that is not combustible and has a low fire risk. It mostly has no special requirements save for the loading of a vessel and protection of certain areas of the vessel and crew from dust. For more details on dust impacts an world standards related to exposure, refer to section 9.4.

## 7 ENVIRONMENTAL CHARACTERISTICS

This section lists pertinent environmental characteristics of the study area and provides a statement on the potential environmental impacts on each.

### 7.1 LOCALITY AND SURROUNDING LAND USE

The proposed warehouse will be located within the Port of Lüderitz (Farm 169) which is zoned for parastatal use and includes harbour and railway land uses (26.638896°S, 15.153960°E) (Figure 7-1). Onshore and offshore land uses in and around Lüderitz include mariculture, fishing and fish processing, port operations, as well as a variety of residential, tourism, business and industrial related uses. On land, Lüderitz is surrounded by the Tsau //Khaeb (previously Sperrgebiet) National Park (Figure 7-7), while offshore the area around Lüderitz, as well as the rocky shores, falls within the proclaimed Namibian Islands' Marine Protected Area (NIMPA) (Figure 7-10).

The site itself is situated in an area intended for industrial use. Activities surrounding the site, and within port limits, are of a similar nature. The Port itself is surrounded by mainly commercial properties, with some residential properties nearby. Immediately west of the proposed warehouse, and just outside of the Port, are undeveloped erven zoned as Residential III. Operations will increase traffic through town and at the port entrance in Hafen Street.

#### *Implications and Impacts*

Although the port itself is zoned for industrial type use, it is surrounded by mixed land-use that includes residential and tourism related establishments. Noise and dust, if not successfully prevented and/or mitigated, will impact on such receptors. Traffic impacts may be expected at the Namport main gate and as a result of trains entering the port.

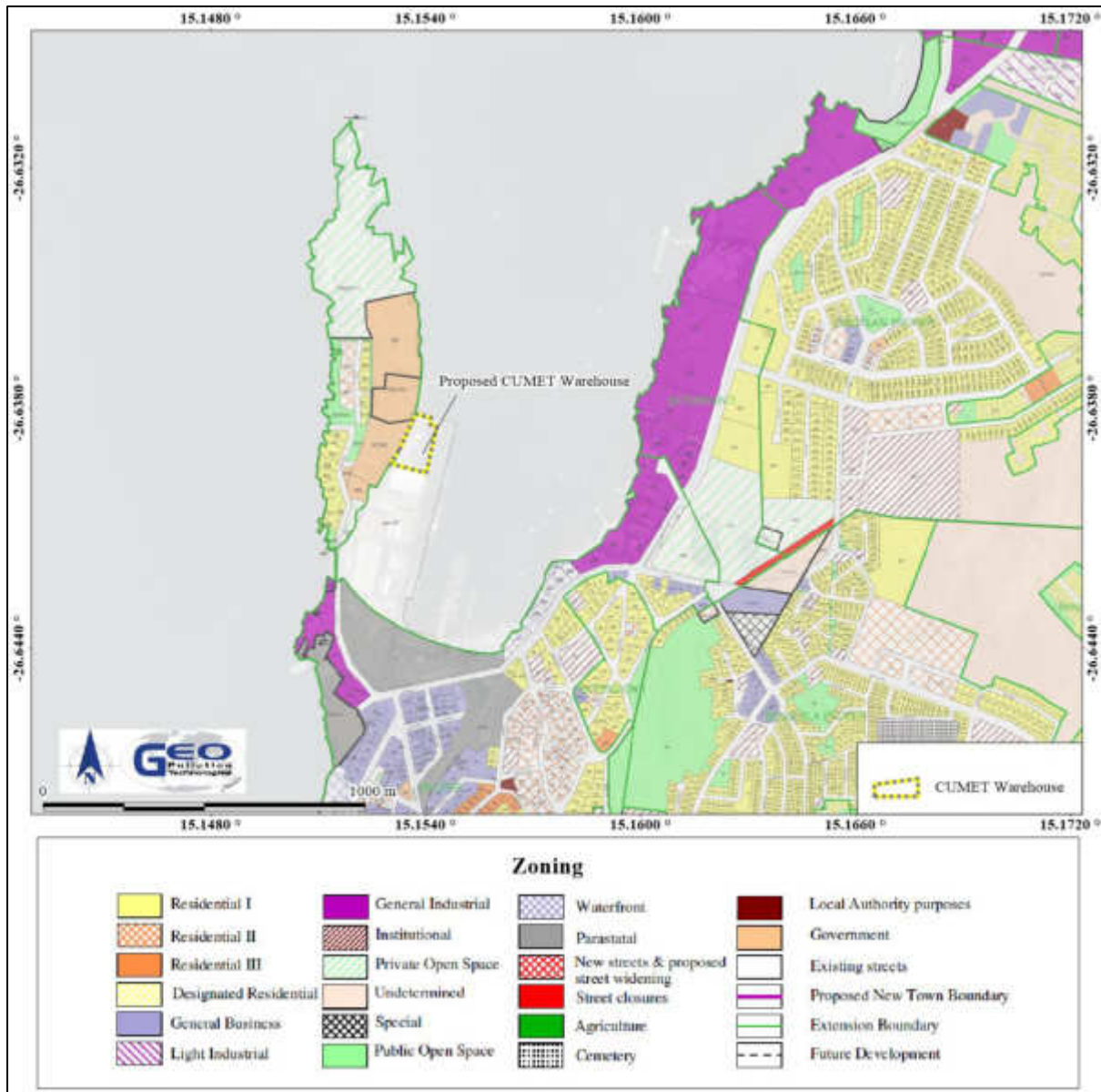
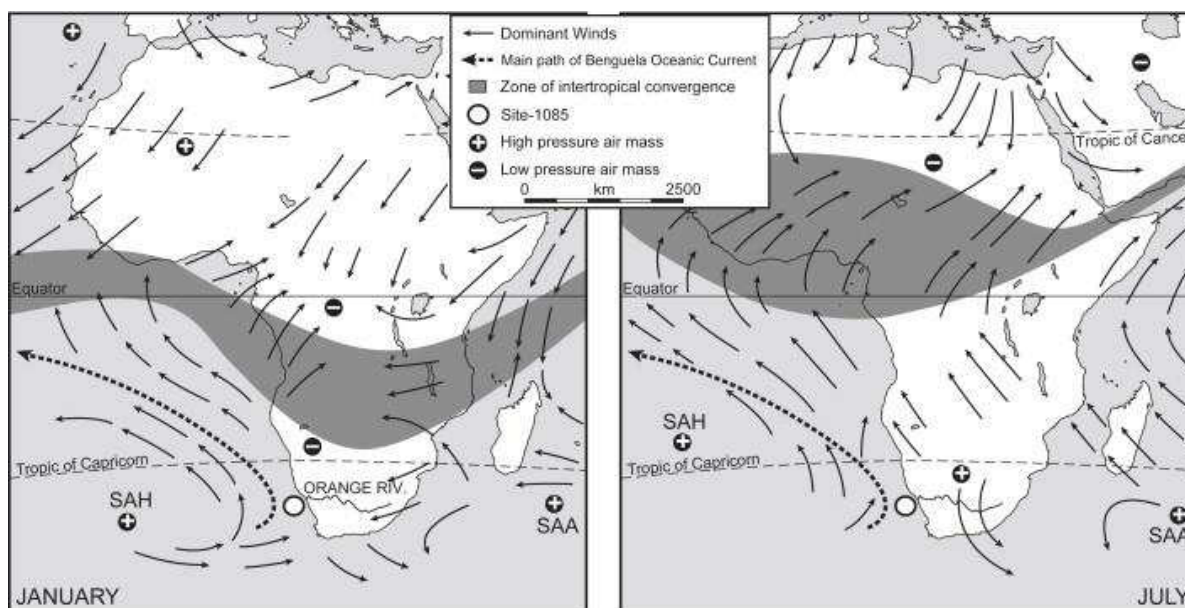


Figure 7-1. Surrounding land use

## 7.2 CLIMATE

Namibia's climate is dominated by dry conditions for most of the year and particularly so in the west. The location of Namibia with respect to the Intertropical Convergence Zone, Subtropical High Pressure Zone and Temperate Zone is what determines the climate, with the Subtropical High Pressure Zone being the major contributor to the dry conditions (Mendelsohn et al., 2002; Bryant, 2010).



**Figure 7-2. Map indicating the Intertropical Convergence Zone, Subtropical High Pressure Zone (SAH+), Benguela Current and Temperate Zone south of Tropic of Capricorn (not indicated) (from: <http://www.meteoweb.eu>)**

Precipitation over Namibia is mainly controlled by the South Atlantic High (SAH), a high pressure cell (anticyclone) situated west of Namibia in the Subtropical High Pressure Zone. The SAH shifts during the year and is at higher latitudes in winter and lower latitudes in summer. In winter, as a result of being situated more north, the high pressure cell pushes any moisture originating from the Intertropical Convergence Zone northwards, preventing rain over Namibia. In summer, because the high pressure cell moves further south and has less of an effect on the Intertropical Convergence Zone, moist air reaches Namibia, resulting in summer rains.

The anticlockwise circulation of the high pressure SAH and the action of the earth's Coriolis force result in strong southerly (longshore) winds blowing northwards up the coastline of Namibia (Bryant, 2010; Corbett, 2018). This longshore wind is responsible for upwelling of the cold, deep waters of the Benguela Current. As a result of the temperature difference between the cold surface water of the Benguela Current and the warm coastal plains, the southerly wind is diverted to a south south-westerly to south-westerly wind at along the coast.

The winds are strongest in early to mid-summer (September to January) when the SAH is at its strongest and most persistent, and the temperature difference between the sea and the desert plains are at its greatest. These winds manifest themselves in the form of strong prevailing south to south-westerly winds, which range from an average of 20 knots (37 km/h) during winter months to as high as 60 knots (111 km/h) during the summer (Table 7-1). Figure 7-3 and Figure 7-4 presents a series of windroses throughout the year, indicating the dominance of the southerly winds over the long term. Daily fluctuations in wind speed are characterised by calmer winds in the morning with strong wind from late morning to late afternoon. During winter, the east winds generated over the hot Namib Desert have a strong effect on temperature, resulting in temperatures in excess of 30 °C and tend to transport plenty of sand.

Throughout the year the prevailing night time wind is a weak easterly wind. This results from the mainland cooling to below the temperature of the coastal water. This results in a coastal low versus an onshore high pressure system with first no wind in the early evening, when temperatures between water and land is similar, and then weak easterly winds as the temperature difference increase.

Temperature at Lüderitz is strongly regulated by the cold Benguela current. As a result, there is typically limited variation between diurnal and seasonal temperatures. Average annual temperatures are approximately 16 °C with the maximum temperature seldom above 24 °C and

minimums rarely below 9 °C (Table 7-1). The only real temperature extremes are experienced during east wind conditions in the autumn to early winter months when temperatures can reach the upper thirties. As one moves inland from Lüderitz, daytime temperatures increases rather quickly while night time temperatures can get significantly colder in the desert environment.

Rainfall is typically low with high variability of 80% to 90%. This results in average annual rainfall figures between 0 and 50 mm. Occasional however, high rainfall events do occur. One such occasion was when 102 mm of rain was recorded at Lüderitz between 16 and 23 April 2006 (Eckardt et al., 2012).

**Table 7-1. Summary of climate data (Atlas of Namibia Project, 2002)**

Average annual rainfall	0-50 mm; half of the rainfall occurs from May to June
Variation in annual rainfall	80 – 90%
Average annual evaporation	2,400-2,600 mm
Average annual water deficit	1,701-1,900 mm
Temperature	Average maximum: Between 24 °C in March/April and 19.3 °C in September Average minimum: Between 16.5 °C in February and 9.1 °C in August Annual average: ≈16 °C
Fog	Approximately 126.7 days of fog per year
Wind	Prevailing wind strong south-westerly
All year wind rose for the period 12 April 2000 to 01 March 2021 for the Lüderitz Airport ( <a href="http://mesonet.agron.iastate.edu/">http://mesonet.agron.iastate.edu/</a> )	

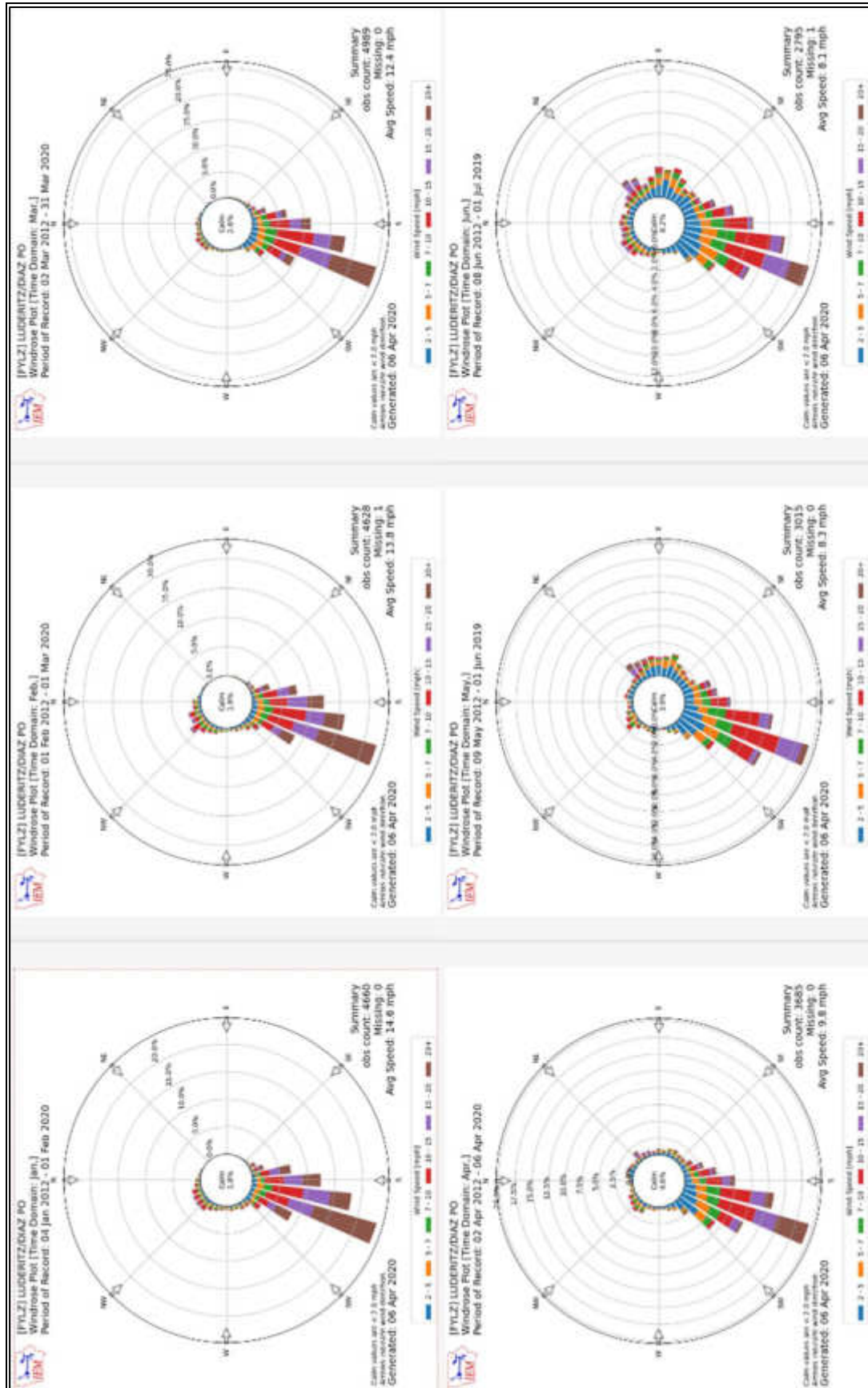


Figure 7-3 January to June wind roses (www.mesonet. agron.iastate.edu/)

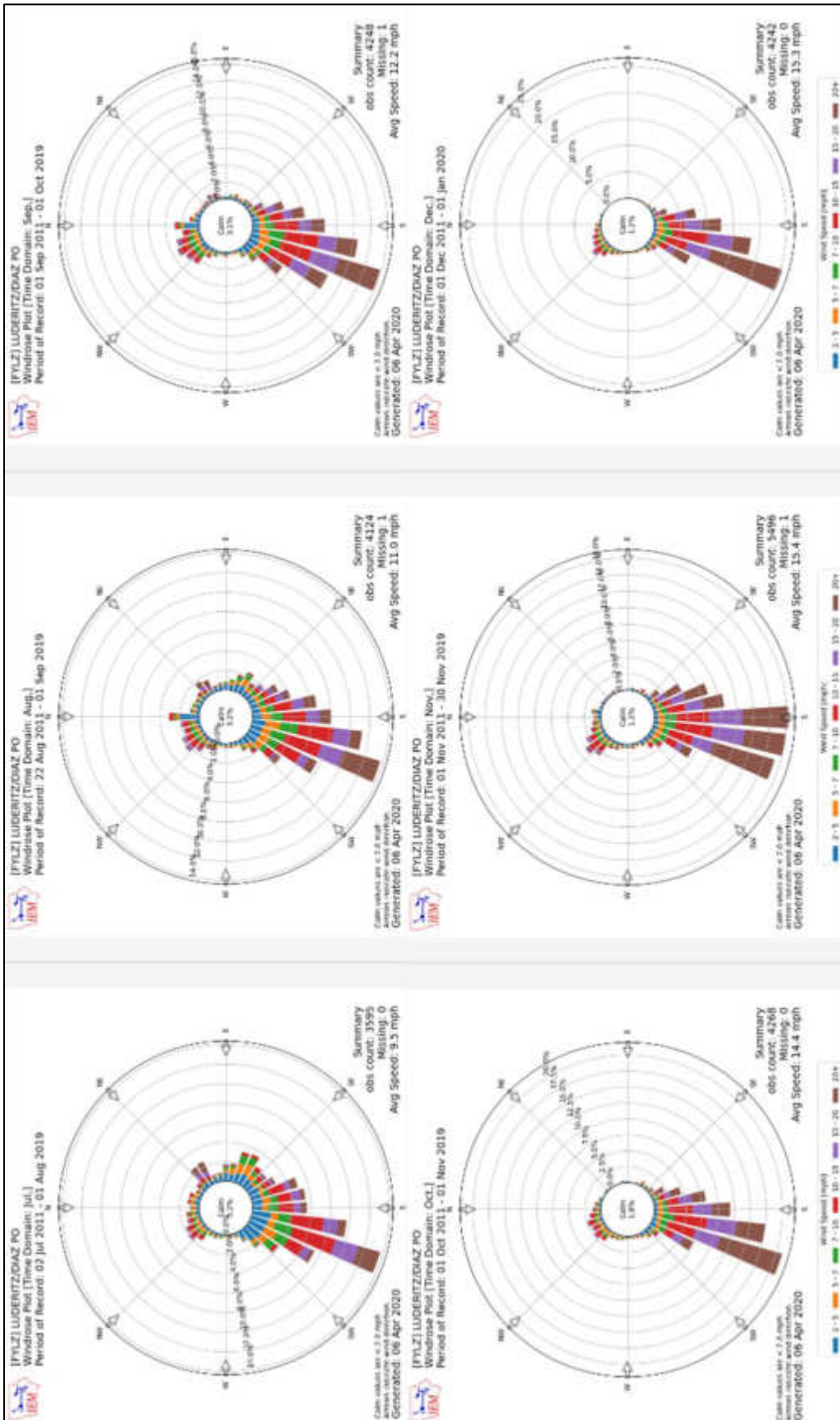


Figure 7-4. July to December wind roses ([www.mesonet.agron.iastate.edu/](http://www.mesonet.agron.iastate.edu/))

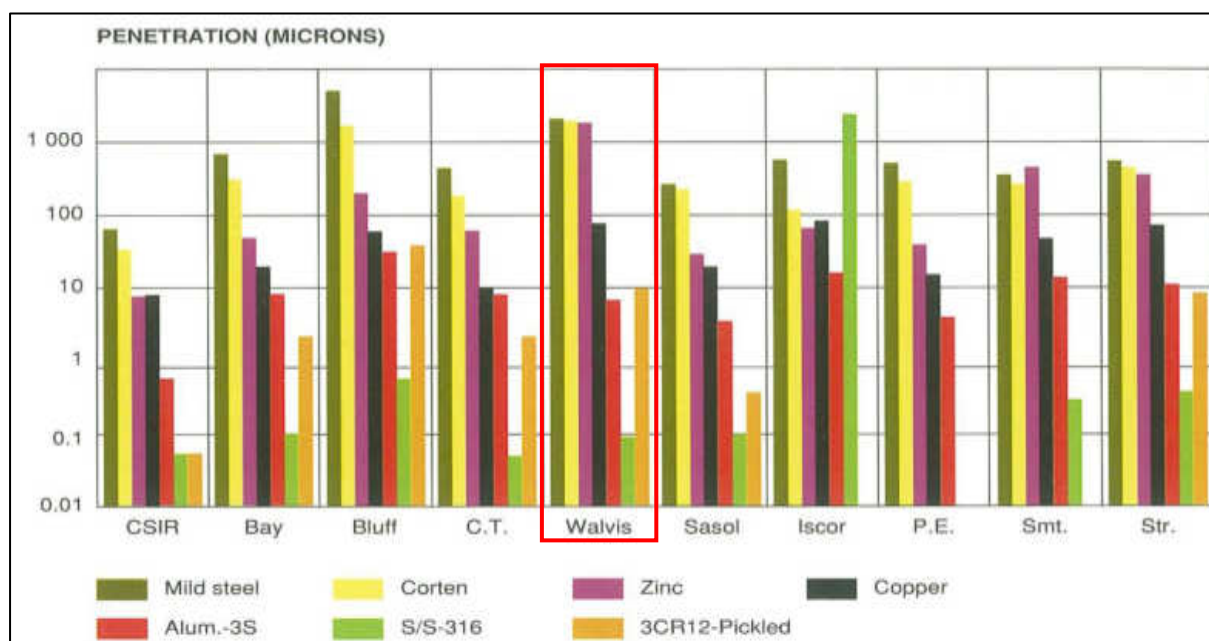


### ***Implications and Impacts***

The characteristic windy conditions of Lüderitz may result in dust impacts where manganese ore is not properly contained or where dust suppression is not adequately performed. This will not only be a concern for human health, but will also pollute the marine environment and result in visual impacts. Prevailing winds are south to south westerly winds which are characteristically strong with east winds in winter. North-westerly winds are typically much weaker. South to south westerly winds may carry dust towards the north of the bay where some mariculture activities are ongoing. North-westerly winds will carry dust to the rest of the port and may impact other port users such as fishing vessels.

### **7.3 CORROSIVE ENVIRONMENT**

The corrosive environment of Lüderitz can be closely related to that of Walvis Bay. Figure 7-5 indicates corrosion data for Walvis Bay compared with other centres in southern Africa (Callaghan, 1991). The corrosive environment may be attributed to the frequent salt-laden fog, periodic winds and abundance of aggressive salts (dominantly sodium chloride and sulphates) in the soil. The periodic release of hydrogen sulphide from the ocean is expected to contribute to corrosion. The combination of high moisture and salt content of the surface soil can lead to rapid deterioration of metal and concrete structures. Chemical weathering of concrete structures due to the abundant salts in the soil is a concern.



**Figure 7-5. Twenty year corrosion exposure results in southern African towns (Callaghan 1991)**

### ***Implications and Impacts***

Corrosion levels may be high and must be kept in mind when planning the construction and maintenance of the facility and related infrastructure.

### **7.4 TOPOGRAPHY AND DRAINAGE**

The terrain around Lüderitz consist of a number of rocky outcrops with islands and peninsulas. Surface drainage is poorly developed in the area, due to the minimal amount of precipitation that occurs. The Atlantic Ocean, specifically Menai Creek and Robert Harbour, is situated directly east of the proposed warehouse to be constructed for ore stockpiling. This is also where barges will be berthed for loading. The warehouse is located in a section of the port that is built on reclaimed land and thus has significantly altered topography. The entire area is levelled and

surfaced with concrete or concrete pavers. In the event of significant rainfall, or if water is used to clean the quayside, runoff can reasonably be expected to be to the east into the harbour.

#### ***Implications and Impacts***

Any pollutants that are not contained and are transported via surface water flow may be transported out of the site to the ocean. Chronic pollution of the ocean with manganese ore dust can have detrimental ecological impacts and result in reduced water quality.

### **7.5 GEOLOGY AND HYDROGEOLOGY**

The project location is dominated by a desert environment with crystalline rock outcrops of the Mesoproterozoic Era (Schneider et al., 2004). The Namib Sand Sea occurs at its closest roughly between six and seven kilometres northeast of the proposed warehouse. The Namib Sand Sea consists of shifting dunes which were formed by eroded rock and sand that have been transported to the area by water and wind during the Quaternary Age.

The regional geology consists of rocks from the Namibian- and Mokolian Age. The Namibian Age rocks are comprised of dolomite, shale, schist, greenschist, ortho-/para-amphibolite, quartzite and / or basal mixite from the Gariep Complex. Rocks from the Mokolian Age underlie the project area and are comprised of biotite-rich augen gneiss, granites, amphibolite and / or intrusives. The Mokolian Age rocks are the oldest in Namibia and form part of the Namaqua Metamorphic Complex Gordonia Subprovince, dating back to 1,200 to 1,460 Ma. Pegmatitic intrusions from the Doornpoort/Eskadorn Formation are common, but basic intrusions are rare (Siegfried, 1992/93).

The structural geology in the study area is very complex due to numerous deformation events. Two major deformation events were identified in the region. A parallel series of normal faults trending north to south occur in the study area. Preferential weathering along these faults has resulted in inlets in the Lüderitz area. They trend roughly 300° and although not always traceable, are of similar orientation to many of the faults in the basement (Siegfried, 1992/93). There are no thrusts in the project area. The closest thrust structures are 9 km west of the project area and commonly strike north - south, having minor thrusts and splays associated with them.

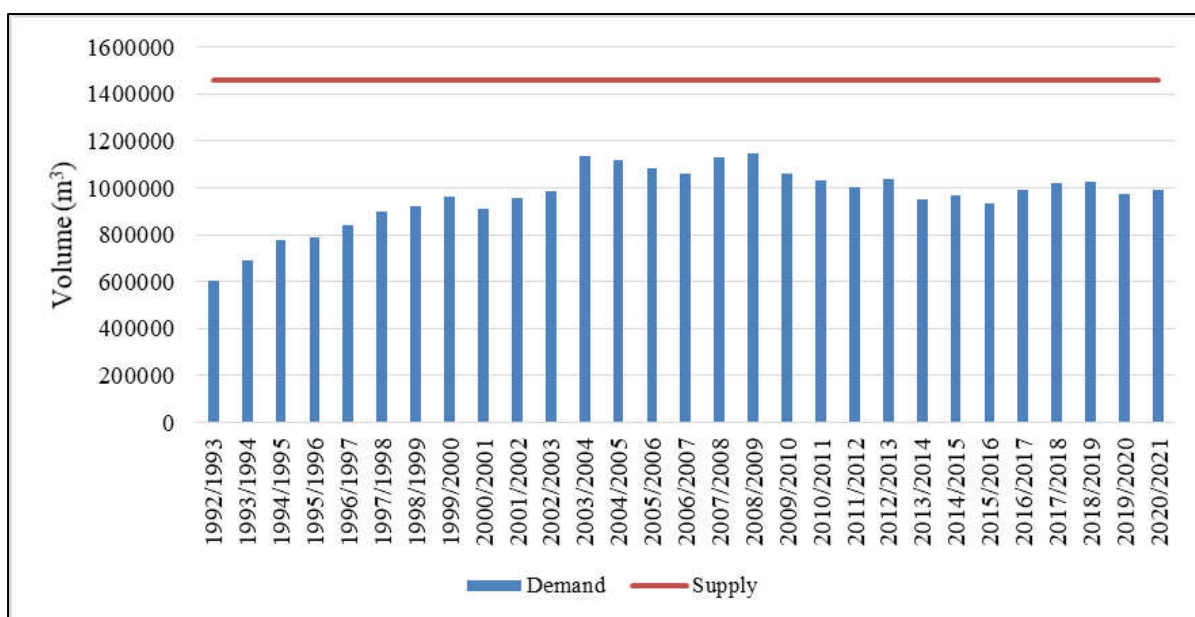
Due to the very close proximity of the project area to the ocean, any groundwater will be saline. No boreholes are known to be present in the vicinity of the study area and town. The groundwater basin is known as the Namib Basin and the location falls outside any groundwater control area. However, groundwater remains the property of the Namibian Government. Lüderitz derives all of its water from the NamWater Koichab Water Supply Scheme, approximately 100 km east of Lüderitz.

#### ***Implications and Impacts***

Groundwater is not utilised in the area. Pollution of the groundwater and soil is however still prohibited. The quayside is however interlocked, with plastic sheeting underneath, to prevent the infiltration of any substances into the soil or groundwater.

### **7.6 PUBLIC WATER SUPPLY**

The NamWater Koichab Water Supply Scheme supplies Lüderitz with potable water. It consists of about nine production boreholes, supplying groundwater from the alluvial aquifer formed in a paleo-channel of the Khoichab River. The total estimated potential supply of the scheme is 1,460,000 m<sup>3</sup> per annum. During the 1990's Lüderitz experienced a gradual increase in water consumption until it reached its peak in 2003/2004. Since then, water consumption has averaged around 1,000,000 m<sup>3</sup> per annum. During the period April 2018 to March 2019, the actual volume of water sold by NamWater was 1,027,508 m<sup>3</sup>. For April 2019 to March 2020 the volume decreased slightly to 975,170 m<sup>3</sup>. For April 2020 to March 2021 there was a slight increase to 993,101 m<sup>3</sup>. The available excess water supply, to support additional development in town, is thus just above 460,000 m<sup>3</sup> per annum.



**Figure 7-6. Potable water supply and usage statistics**

#### ***Implications and Impacts***

Domestic use of potable water at the warehouse will minimally impact on potable water supply resources. Should dust suppression with potable water take place, the pressure on this resource will increase slightly. However, a shortage of water is not expected to occur as a result of the project as Lüderitz currently use about two thirds of its available water supply.

## **7.7 ECOLOGY**

### **7.7.1 Terrestrial**

The Lüderitz Peninsula is part of the Succulent Karoo Biome with a succulent steppe vegetation type and dwarf shrubland structure (Atlas of Namibia Project, 2002). The Succulent Karoo is a biodiversity hotspot and has the world's richest succulent diversity which is also characterised by high reptile and invertebrate diversity (CEPF, 2005). In Namibia, almost the entire Succulent Karoo Biome is protected in the Tsau //Khaeb National Park (Sperrgebiet National Park). The project location is situated outside of the Tsau //Khaeb National Park and within the Lüderitz proclaimed townlands (Figure 7-7).

The Lüderitz structure plan identified sensitive and no-go areas based on available information (SPC, 2015). These areas are indicated in Figure 7-8. While most of Lüderitz and its surroundings are regarded as "tread light" areas, the rocky outcrops are typically regarded as no-go areas. This is mainly due to niche differentiation that is more pronounced in the rocky outcrops. While the entire area of Lüderitz's townlands is considered a tread light area, it has been earmarked for town development and the area for the warehouse was previously disturbed.

Brown hyena, jackal, springbok, porcupines, ostrich and oryx are some of the larger animals that utilize the areas surrounding Lüderitz. Brown hyenas roam in the vicinity of Lüderitz, but tend to avoid areas of human movement. They do however frequently cross the B4 Main Road. Along the length of the transport route through Namibia various animals occur and can be found crossing the roads. This include kudu (especially in mountainous areas), spotted hyenas, jackal, the wild horses of the Namib, as well as livestock such as donkeys and cattle.

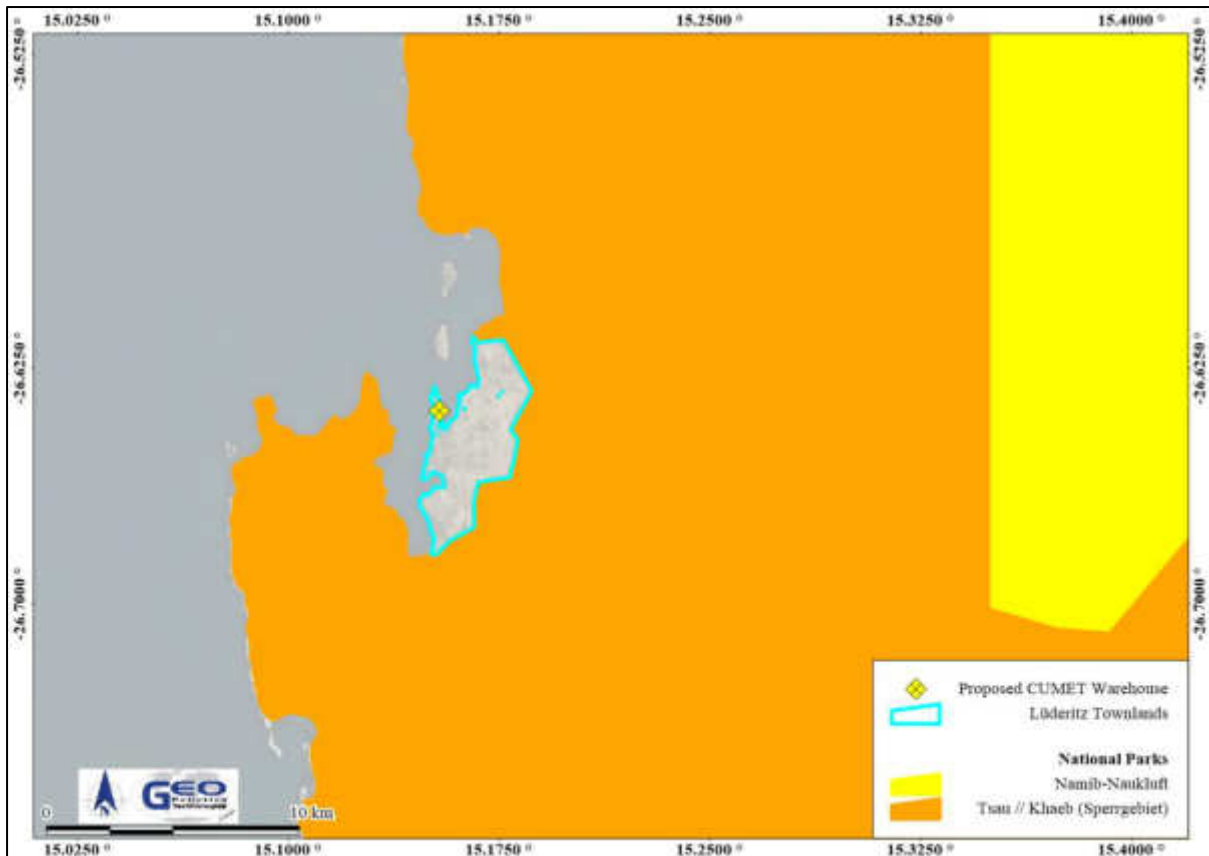


Figure 7-7. Project location in relation to terrestrial protected areas

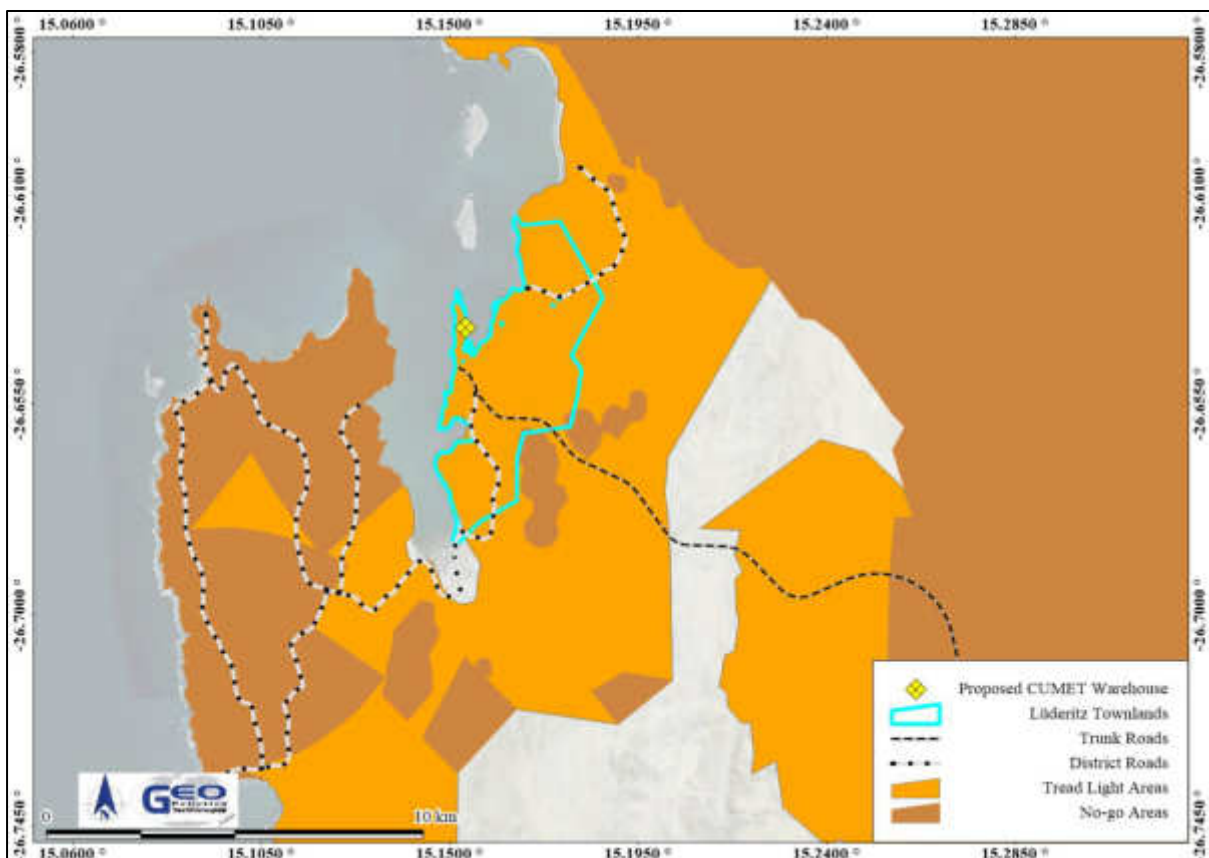


Figure 7-8. Tread light and no-go areas as identified in the Lüderitz Structure Plan (SPC, 2015)

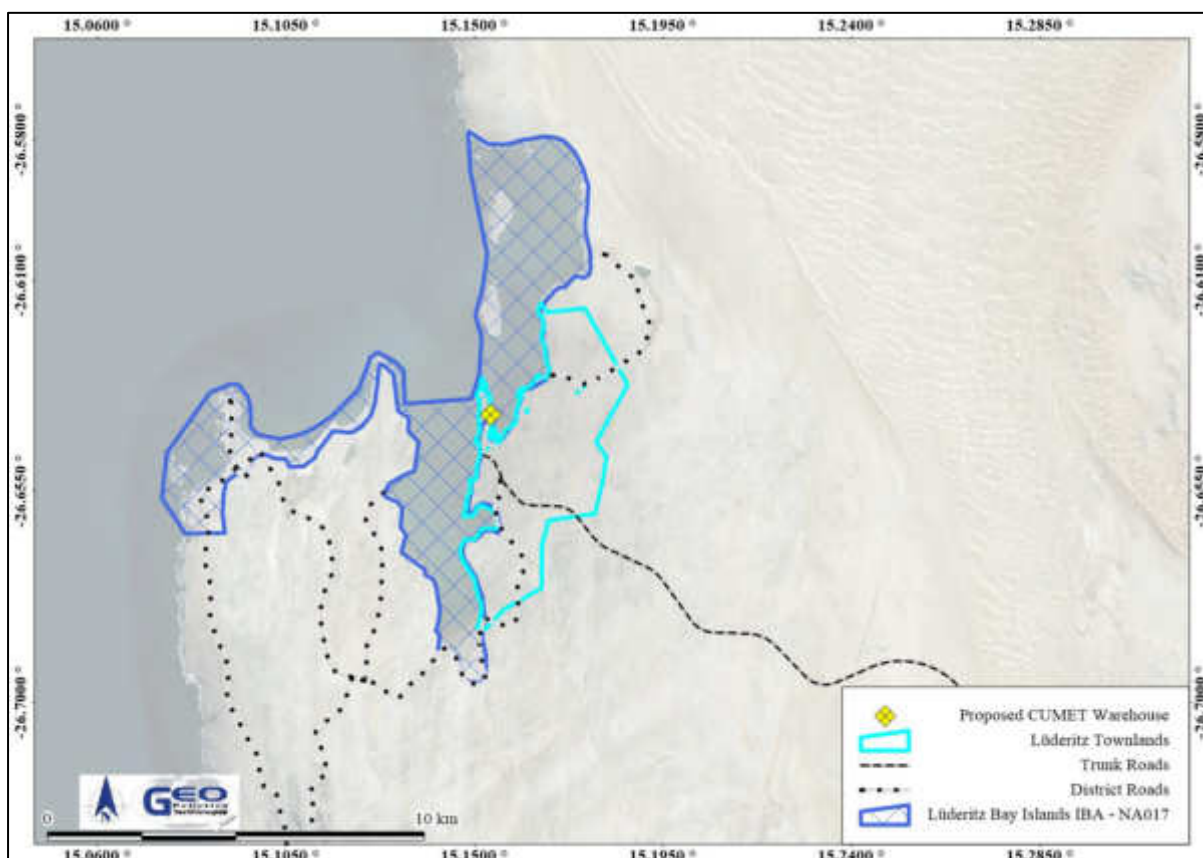
### ***Implications and Impacts***

The warehouse will be located within an already disturbed area. No immediate threat to terrestrial ecology in the area is expected from its operations. Linked to the project is the transport of manganese ore from South Africa to Lüderitz. For the transport component collisions between trucks and animals on the roads are of concern, especially animals such as brown hyenas and the wild horses of the Namib. While the transport component is not part of this EIA, a holistic approach to the project is required from all role-players involved.

#### **7.7.2 Avifauna**

The Lüderitz area has rich bird diversity. The coastline, including the Halifax, Penguin, Seal and Flamingo Islands, falls within an important bird area (IBA) – the Lüderitz Bay Islands (NA017) IBA (<http://datazone.birdlife.org/>). The island complex of the IBA supports up to 10,000 birds while an additional 14,000 shorebirds are supported by the rocky coastline (BirdLife International, 2017). Historically, anthropogenic pressures on many of the bird species have led to a steep decline in their numbers. This was largely as a result of guano harvesting, egg collection and habitat alteration and loss.

Some important species that are considered endangered, vulnerable or near threatened, and occurring within or near IBA NA017, are presented in Table 7-2 with some notes on their status and threats (<https://www.iucnredlist.org/>; BirdLife International, 2021). The various shallow bay areas, and specifically Angra Point and the Second Lagoon area of Lüderitz Harbour, are important, specifically for flamingos and waders (Pulfrich, 2010).



**Figure 7-9. Lüderitz Bay Islands important bird area (IBA NA017)**

**Table 7-2. Key bird species in IBA NA017 (list not exhaustive)**

Common Name (Scientific Name)	Range	Status (Last Assessed)	Comments	Current Threats
African Penguin ( <i>Spheniscus demersus</i> )	Endemic to southern Africa (Namibia; South Africa; Angola; Mozambique)	Endangered (2019)	Rapid population decline with no sign of reversal	Commercial fishing and shifts in prey populations
Bank Cormorant ( <i>Phalacrocorax neglectus</i> )	Native to Namibia and South Africa	Endangered (2018)	Very rapid decline in small population	Human disturbance, displacement by seals, food shortages and low quality food
Damara Tern ( <i>Sternula balaenarum</i> )	Breeding resident in Namibia	Vulnerable (2018)	Decreasing population	Habitat disturbance and mining
Curlew Sandpiper ( <i>Calidris ferruginea</i> )	Namibian resident with wide global distribution	Near Threatened (2016)	Decreasing population	Habitat loss and degradation, human disturbance
Red Knot ( <i>Calidris canutus</i> )	Namibian native with wide global distribution	Near Threatened (2018)	Decreasing population	Habitat loss and human disturbance
Lesser Flamingo ( <i>Phoeniconaias minor</i> )	Namibian native with relatively wide global distribution	Near Threatened (2018)	Decreasing population	Mining, power generation and transmission
White-chinned Petrel ( <i>Procellaria aequinoctialis</i> )	Non-breeding native to Namibia with wide global geographic	Vulnerable (2018)	Decreasing population	Commercial fishing
African Oystercatcher ( <i>Haematopus moquini</i> )	Native to Namibia and South Africa	Near Threatened (2016)	Small population, probably increasing population	Human disturbance e.g. off-road driving on beaches
Crowned Cormorant ( <i>Microcarbo coronatus</i> )	Native to Namibia and South Africa	Near Threatened (2016)	Small but stable population	Disturbance and marine pollution
Cape Gannet ( <i>Morus capensis</i> )	Native to southern Africa	Endangered (2018)	Decreasing population	Food shortage, storms, habitat loss, marine pollution, etc.

Source: The IUCN Red List of Threatened Species Website <https://www.iucnredlist.org/>; BirdLife International, 2021

#### ***Implications and Impacts***

With regards to birds, the impact may be from the warehouse operations on the birds, as well as birds on the infrastructure. The most pertinent impact on birds includes bright lighting used at night that may cause disorientation in birds flying at night resulting in collisions with manmade structures. Birds nesting on infrastructure may have a negative visual impact as a result of bird excreta that may accumulate on, for example, buildings. Links have also been made between bird excreta and increased corrosion rates of building materials, especially where such excreta is more acidic.

### 7.7.1 Marine and Coastal

The Namibian marine coastal environment is characterised by relatively low species diversity with high abundance. It is typically also a dynamic ecosystem with relatively high resilience against impacts, when compared with the more tropical waters of for example the east coast of southern Africa. In the vicinity of the proposed warehouse and future jetty, the seashore is mostly rocky with intertidal rocky shores and submerged reefs.

Biological communities found in these habitats are not particularly unique and their presence are mostly determined by the environmental characteristics such as depth, wave action and substrate (Pulfrich, 2010). A relatively detailed, although large scale and very generalized, summary on the biodiversity of sandy beaches, rocky intertidal shores, near- and offshore soft sediments, subtidal reefs and kelp beds, and mixed shores are provided by Pulfrich (2010). According to Pulfrich (2010) Lüderitz Bay is not ecologically unique within the Benguela ecosystem, neither is it particularly pristine. However, Pulfrich does draw attention to the possible cumulative effects of the existing Port of Lüderitz and proposed future port developments.

Two aspects of the marine ecology should be highlighted. Firstly, the entire Lüderitz Bay area is a proclaimed rock lobster (*Jasus lalandii*) sanctuary (Figure 7-10). Rocky areas are important lobster recruitment areas within the sanctuary (Pers. Communication: Kolette Grobler). Secondly, the presence of the Second Lagoon, at the southern end of Lüderitz Harbour. The lagoon has an area of approximately 9.4 km<sup>2</sup> and an average depth of less than 5 m (www.nacoma.org). It is a coastal wetland and is the only coastal wetland between the Orange River mouth and Sandwich Harbour that provide foraging grounds for foraging shorebirds (Pulfrich, 2010; www.nacoma.org). It thus forms an important stepping stone between the two wetlands for migratory birds by providing roosting and foraging habitat along the journey. The offshore area and coastline of Lüderitz Harbour (and the entire Lüderitz bay area) are part of the NIMPA (Figure 7-10).

Approximately 25 species of cetaceans occur along the Namibian coast. This includes migratory, resident and semi-resident species. Under Namibian law, all whales and dolphins are protected species and may not be harvested. Bottlenose dolphins, Heaveside's dolphins and dusky dolphins occur within Lüderitz Bay. Humpback whales and the Southern Right whale are also occasionally encountered (Pulfrich, 2010).

Namibia has quite a large population of Cape fur seals. A small colony are present at Diaz 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.

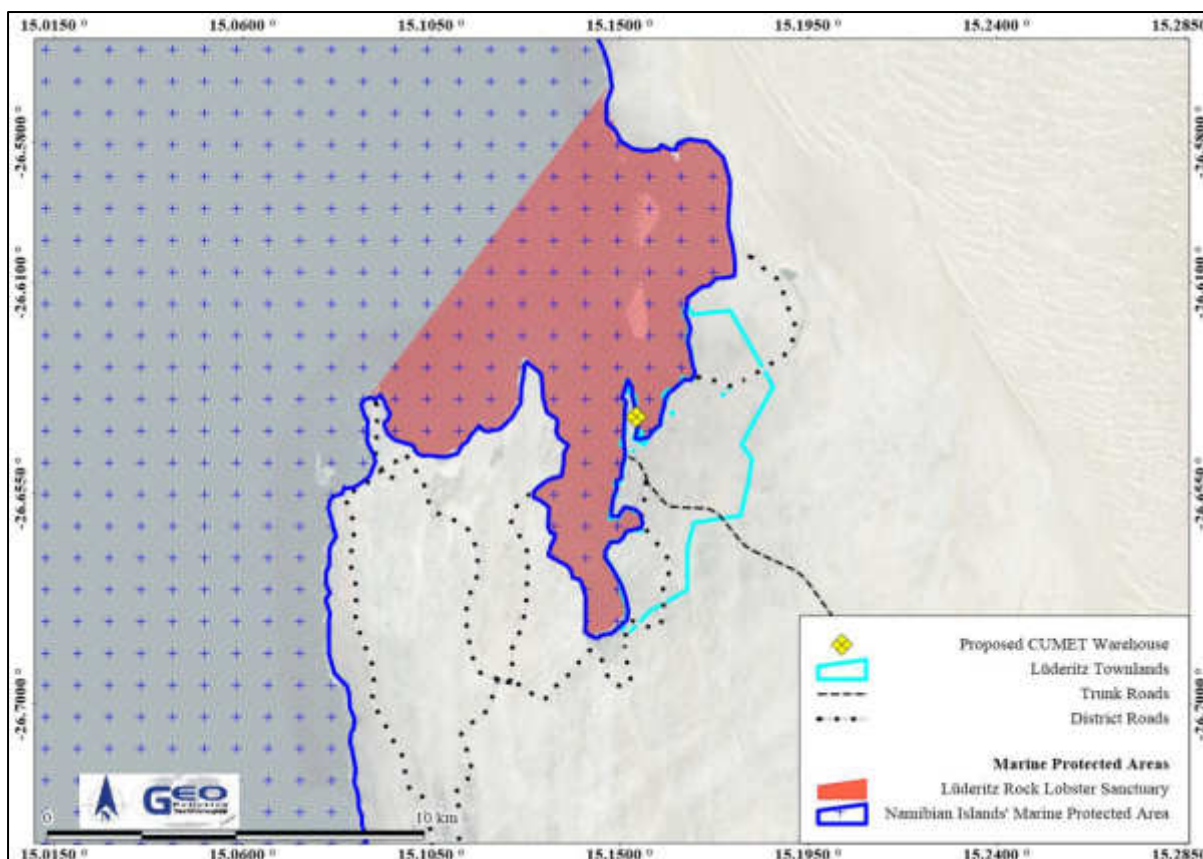


Figure 7-10. Marine protected areas in relation to the CUMET warehouse

## 7.1 DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS

### 7.1.1 Demographic Characteristics

The //Karas Region is the largest, but also least densely populated, region in Namibia. During the 2011 census, the population was determined to be 77,421, which indicated an average annual increase of 1.1% from the 2001 census (Namibia Statistics Agency, 2011). However, the Namibian intercensal demographic survey of 2016, shows an annual population growth rate of 2% and estimates the population at 85,759 (Namibia Statistics Agency, 2017). This is slightly more than the Namibian intercensal growth rate of 1.9%.

For the period 2001 to 2011, the Lüderitz Constituency showed a decline in population size from 14,542 to 13,859 (Namibia Statistics Agency, 2011). The remoteness of Lüderitz and the lack of employment and economic diversification opportunities possibly contributed to this decline with some inhabitants relocating to other urban centres offering better prospects. Lüderitz's unemployment rate decreased slightly from 2001 (30%) to 2011 (28%) which is lower than the 2011 unemployment rate of 32% for the //Karas Region (Namibia Statistics Agency, 2011).

The main source of income for the Lüderitz community is wages and salaries with about 80% of households relying on this form of income. Very few households rely on farming and other business activities for their income.



**Table 7-3. Demographic characteristics of Lüderitz Constituency, the //Karas Region and Nationally (Namibia Statistics Agency, 2011)**

	Lüderitz Constituency	//Karas Region	Namibia
Population (Males)	6,972	39,407	1,021,912
Population (Females)	6,887	38,014	1,091,165
Population (Total)	13,859	77,421 (85,759)**	2,113,077 (2,324,388)**
Density (persons/km <sup>2</sup> )	0.3	0.5	2.6
Unemployment (15+ years)	28%	32.9%	37%
Literacy (15+ years)	98%	97%	89%

\*Data available from preliminary results only (National Planning Commission, 2012)

\*\*Namibian inter-censal demographic survey of 2016 (Namibia Statistics Agency, 2017)

#### ***Implications and Impacts***

The proposed project will create some new jobs as well as sustain existing jobs at local, regional and national level. The development may have an influence on further stimulating economic growth of the area, which may result in more job opportunities.

#### **7.1.2 The Port of Lüderitz**

Although Lüderitz Bay was first visited by Bartholomew Diaz in the late 15<sup>th</sup> century, it, apart from the Khoisan moving through, remained uninhabited until 1883 when it was founded as a trading post (Robertson et al., 2012). Eventually, it would be the discovery of diamonds and the lucrative fishing and crayfish industry that would lead to the growth in the town up to what is established there today. Lüderitz was thus ultimately first established as a harbour town, with the port being central to its economic activities and resource imports and exports. Road and rail infrastructure were historically constructed with the main aim of serving the port. Today the port remains central to the mining and fishing industries of southern Namibia and is one of the main direct and indirect economic drivers of the town.

#### ***Implications and Impacts***

The port is limited in terms of its capacity for bulk cargo handling. The envisioned CUMET project will significantly increase the volume of cargo (manganese ore only) that will be handled from the Port of Lüderitz. This will significantly contribute to the generation of revenue and contribution to national treasury.

#### **7.1.3 Mining**

Lüderitz thrived in the early 20<sup>th</sup> century mainly as a result of the diamond mining industry. Today however, the sustaining industries in Lüderitz include fishing, mariculture and tourism. Diamond mining continues to be a major part of the mining industry in southern Namibia and provides employment to a significant portion of the region's population.

Second to diamond mining is zinc and lead mining activities at Rosh Pinah and manganese ore is already exported via Namibia. During the period April 2019 to March 2020, 204,301 tons of manganese ore, 137,965 tons of zinc product and 13,710 tons of lead concentrate were exported via the Port of Lüderitz (Namport, 2019/2020). Zinc oxide is also imported in small quantities for refining purposes at the Rosh Pinah mines. The Rosh Pinah mines requires sulphur for their refining process and during the 2019/2020 period 75,205 tons of sulphur were imported via the port (Namport, 2019/2020). The Port of Lüderitz therefore plays an essential role in the mining sector of southern Namibia and beyond.

#### ***Implications and Impacts***

Since all mining products are transported to the Port of Lüderitz with trucks, a cumulative impact by traffic on the B4 Main Road and streets within Lüderitz is expected. While the transport of

the ore falls outside of the scope of the EIA, it should be considered in a holistic approach by all parties involved in the project.

Port congestion due to the more frequent berthing of vessels to load manganese ore may impact on other port users, such as mining vessels, if not well coordinated.

#### 7.1.4 Fishing and Mariculture

Currently, the majority of employment in Lüderitz is provided by the fishing industry, which mainly exports fisheries products to Europe. Lüderitz is well known for its West Coast rock lobsters, which is one of the key fisheries resources exploited here. The Namibian mariculture industry is centred on Walvis Bay and Lüderitz. In Lüderitz abalone and oysters are farmed mainly for international markets (Figure 7-11). During the 2019/2020 period, 33,286 tons of fish were landed at the Port of Lüderitz (Namport, 2019/2020).

Based on the 2011 census results (Namibia Statistics Agency, 2011), 2,211 residents of the Lüderitz Constituency are employed in the agricultural and fisheries industry. Since agriculture is practiced in a very small area of this constituency, it is safe to say that most of the 2,211 workers were employed in the fishing industry.

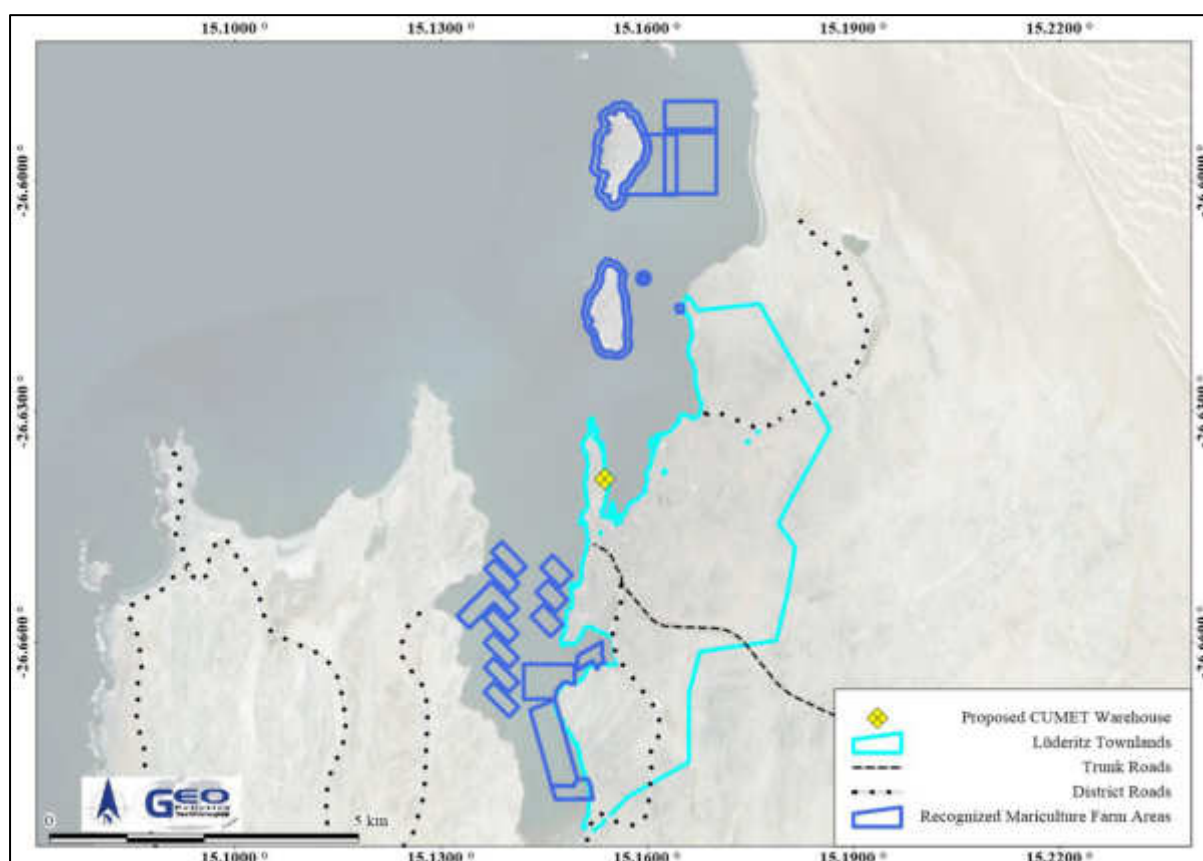


Figure 7-11. Mariculture areas around Lüderitz

#### *Implications and Impacts*

If dust is not contained in the warehouse and during loading of the bulk cargo ship, the manganese ore dust may impact on fishing vessels at berth in the port, especially when north to north-westerly winds blow. This impact can include contamination of fish products being offloaded from the vessels. Although considered unlikely for remote mariculture locations, contamination of the seawater with manganese ore dust may impact mariculture farms. Especially if new farming areas are developed closer to the port.

Port congestion due to the more frequent berthing of vessels to load manganese ore may impact on other port users, such as fishing vessels, if not well coordinated.

### 7.1.5 Tourism

Lüderitz largely depends on the same economic sectors as when it was established, namely mining and fishing. However, tourism plays an important part in the local economy. The uniqueness of the town, the rich heritage of the old buildings, and most importantly the “ghost town” of Kolmanskop, are the main tourist attractions. Unfortunately, the town is situated in what is ultimately a 125 km long cul-de-sac. This deters a large number of tourists visiting Namibia, from including Lüderitz in their itinerary.

Namibia in its entirety are increasingly focussing on tourism and many residents of Lüderitz have turned to the tourism and hospitality sector. This includes operating various types of accommodation including back packers, self-catering, bed and breakfast, and hotel accommodation, as well as day excursions to Kolmanskop and the Sperrgebiet, dolphin cruises, and guided trips to the restricted areas of the historic diamond mining areas.

During the period April 2015 to March 2016, 19 passenger ships called at the Port of Lüderitz. For the same period 2016/2017 it was seven and 2017/2018 nine passenger ships. These cruise liners either enter and berth inside the Port of Lüderitz or anchor outside in deeper waters and transport passengers with smaller crafts to the port.

Lüderitz is now host to an annual international speed sailing event which attract speed sailors from around the world who attempts to break various records during a six week period. The crayfish festival, with the aim of boosting local enterprise and investment, is another annual event aimed at locals and tourists.

Based on the 2011 census results (Namibia Statistics Agency, 2011), 229 residents of the Lüderitz Constituency were employed in the accommodation and food service industry. Due to the growth in the tourism sector, this number is expected to have been higher during the latter part of the decade. However, the recent Covid-19 pandemic that has brought the tourism industry to a standstill in 2020, have resulted in closing down of many tourism establishments in Namibia, accompanied by many associated job losses. Lüderitz is not expected to have been spared this ordeal and some establishments or tourism ventures may have suffered the same fate.

#### ***Implications and Impacts***

Noise originating from operations in the port will impact on nearby tourism establishments, for example those on Shark Island, especially so during interim phases when skip loading is used. Traffic through town will similarly cause noise impacts in town and this will be cumulative in nature when considering existing heavy motor vehicle traffic to the port through town. While the transport of the ore falls outside of the scope of the EIA, it should be considered in a holistic approach by all parties involved in the project.

Port congestion due to the more frequent berthing of vessels to load manganese ore may impact on other port users, such as passenger liners, if not well coordinated.

A positive spinoff of the proposed project include more resilience in the economic sphere of the town. This is evident in the ongoing Covid-19 pandemic that has severely hampered the tourism industry. Port operations and manganese ore exports however continued, although slightly hampered, thus still generating revenue and providing business opportunities to Lüderitz and Namibia as a whole.

## **7.2 CULTURAL, HERITAGE AND ARCHAEOLOGICAL ASPECTS**

Lüderitz is one of the oldest towns in Namibia and therefore hosts a number of historically important buildings. Lüderitz developed around the port area and thus the historic centre of the town is also situated around the port. In terms of the rich culture and heritage of Lüderitz, the structure plan for Lüderitz (SPC, 2015) states:

*“it is the opinion of the authors of this report that it would be preferred over the long term if energy is directed toward the development of a second port rather than the expansion of the existing port, as expansion of the existing port may result in the following;*

*Increase in road and rail traffic may cause disruption to the functioning of the existing town, which is in direct conflict with government and town initiative to promote tourism through capital investment programs.*

*As an integral part of the town’s urban fabric, further industrialisation of the existing port will adversely affect the character of Lüderitz.*

*The neighbourhoods directly surrounding the port are those of the greatest historic value, so any expansion into these areas would adversely affect the heritage value of the town.”*

A number of buildings have been declared National Monuments in Lüderitz and these include, among others, the Railway Station Building in Bahnhof Street, the German Lutheran Church in Kirch Street, the Deutsche Africa Bank Building and Krabbenhöft und Lampe Building in Bismarck Street.



**Photo 7-1. Krabbenhöft und Lampe building**



**Photo 7-2. Deutsche Africa Bank building**

#### ***Implications and Impacts***

The port itself does not contain any known artefacts or buildings of cultural, heritage or archaeological significance. It is however surrounded by such artefacts, buildings or places. Dust from the operations of the CUMET is not likely to reach these artefacts, buildings or places due to the prevailing strong south-westerly winds and weak periodic north to north-westerly winds. The cumulative impact of trucks moving through the historic town centre, currently the only possible route to the port, will impact on the cultural and historically significant heritage areas of the town. A possibility of vibration and air pollution related damage to old and new buildings exist. While the transport of the ore falls outside of the scope of the EIA, it should be considered in a holistic approach by all parties involved in the project.

## **8 PUBLIC CONSULTATION**

Consultation with the public forms an integral component of an environmental assessment investigation and enables interested and affected parties (IAPs) e.g. neighbouring landowners, local authorities, environmental groups, civic associations and communities, to comment on the potential environmental impacts associated with projects and to identify additional issues which they feel should be addressed in the environmental assessment.

Public participation notices were advertised twice for two weeks in the national papers: Republikein and Namibian Sun on 11 and 18 October 2021. A site notice was placed at the Lüderitz Town Council. Interested and affected parties were identified and notified via mostly electronic means of the project. Notification letters were hand delivered to various port users, the Lüderitz Town Council and various government offices. A public meeting was conducted in Lüderitz to present and discuss the project. During the meeting some concerns and benefits related to the project were raised. Key to the concerns

are the impacts of noise, traffic and environmental pollution by dust. Benefits were identified as employment and business opportunities, but only if these are presented to Namibians, and specifically residents and businesses of Lüderitz. See Appendix A for proof of the public participation processes, the minutes of the public meeting, and all comments received. The various identified impacts are considered in section 9 and section 10.

## **9 MAJOR IDENTIFIED IMPACTS**

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During the scoping exercise a number of potential environmental impacts have been identified. The following section provides a brief description of the most important of these impacts.

### **9.1 EMPLOYMENT**

Based on 2011 census data, the Lüderitz Constituency has an unemployment rate of 28.2%. Thus, there is a definite need for more employment opportunities in Lüderitz. In terms of direct employment opportunities, Lüderitz Bay Shipping and Forwarding will employ up to 64 employees at the CUMET. If the required skills are locally available, they are committed to first employ from the town, then the Region and then Namibia. This will include both unskilled and skilled labourers. In addition about 15 temporary positions will be created for stevedoring functions.

The transport of the ore is not part of the Proponent's operations, but it will create hundreds of jobs as truck drivers. Similarly, transshipment operations will also create some additional employment opportunities. In addition a number of indirect jobs will be sustained or created. This include employment in engineering, mechanical repairs, parts supply and maintenance; port operations; and fuel, accommodation and food services.

During operations skills development and training will be a benefit to direct and indirect employees. Each employee will become financially more resilient and have more spending power in their hometowns or, in case of truck drivers, on their routes.

During the development phase local and regional construction and building supply industries will temporarily benefit from construction activities associated with the establishment of the warehouse.

### **9.2 ECONOMIC IMPACTS**

The economy of Lüderitz rests on three core industries namely fishing, mining and tourism. Diversification of economy is crucial in establishing economic resilience within the town and region as a whole. A reduction in productivity of either one of the three sectors (fishing, mining and tourism) can have significant economic impacts in the town, as was seen with the recent Covid-19 pandemic.

Economic benefits will be direct and indirect in nature. It will also realise at local, regional and national level. Income will increase proportionally for each additional shipment of ore per month. Salaries, fuel and fuel related levies, maintenance and repairs, income tax, etc. will be indirect financial spinoffs. A portion of the Lüderitz and national population will have increased spending power which in turn helps to sustain various business.

### **9.3 TOURISM IMPACTS**

Noise will be the major negative impact on tourism, especially at accommodation establishments situated along or near the port and the proposed transport route through Namibia and the town. Since it will be a 24 hour operation, noise impacts will also be experienced at night. The increased number of trucks travelling along Bismarck Street may also have some impact on tourists visiting the street and shops.

It is likely that tourists may however also expect industrial and transport activities in Lüderitz since these are typically associated with harbour towns. Tourists visiting nearby Kolmanskop, Diaz Point, etc. will be minimally impacted by the operations that occur in town, but increased

rail or road traffic between Aus and Lüderitz may be a nuisance to visitors of Kolmanskop and Lüderitz.

What should be taken into consideration is that the B4 Main Road and rail were constructed decades ago as links between the interior and the Port of Lüderitz. It can thus reasonably be expected that transport along these corridors will increase as the demand for port services increase.

#### **9.4 AIR QUALITY RELATED HEALTH IMPACTS**

Manganese is a heavy metal naturally occurring in the earth's crust in compound form as for example oxides or carbonates (Beukes et al., 2016). It is a trace element required for normal physiological functioning. The tolerable upper intake level for 70 kg adults is 11 mg manganese per day through ingestion of its inorganic forms (ATSDR, 2012). Excessive exposure by ingestion or inhalation of manganese may result in adverse effects in humans and animals (see for example Zeng et al., 2009; Duka et al., 2011; ATSDR 2012). As with all substances, the likelihood of manifestation of toxic effects depends on the dose, duration and route of exposure. Typical sources of exposure to manganese include food, drinking water, cigarette smoke, workers in manganese mine operations, and industrial exposure (manganese refineries, welding, sintering, etc.).

The major adverse effects that can be caused by excessive manganese exposure are neurological impairment (e.g. slow movements or reaction times and Parkinson's-like symptoms), reproductive abnormalities and lung irritation that can lead to pneumonia (EPA, 2003; WHO, 2003; ATSDR, 2012). Scientific evidence and case studies indicating the toxicity of manganese are mostly limited to scenarios where exposure is linked to ferroalloy smelters, sinters, welding operations and workers directly involved with mining activities (see for example the reviews by Santamaria 2008 and O'Neal and Zheng, 2015). These case studies are instances of chronic, and typically high dose, exposure. Severe instances of neurological impairment only becomes evident at levels twenty thousand to a million times higher than normal concentrations of manganese in air (ATSDR, 2012). While the evidence for deleterious health effects has well been described for workers exposed to high levels of manganese in for example refineries and battery plants, data on acute high dose exposure to specifically manganese ore dust are lacking.

One study conducted by Duka et al. (2011), assessed children living around an open manganese mine in Ukraine for chronic manganese toxicity. The sample group of 683 children in the manganese mine area were compared with 56 children from a reference area remote from mining activities. The study found that children near the mine had, among others, statistically significant more incidences of growth and developmental problems, which positively correlated with manganese concentrations in hair samples. The authors thus concluded that there are definite deleterious health consequence when living in a manganese mining area. However, although the conclusion of the paper only refers to a "mining area", it does state in its methods, that a sinter plant (agglomeration plant) is also present. Thus, once again the conclusions are not based on low level ore dust exposure only, but possibly also on the presence of manganese fumes originating from the sinter plant.

Given the existing information on manganese and its dose-response relationships in terms of exposure, it can be concluded that not enough scientific evidence is available on the potential low dose exposure effects that will be associated with the transport and handling of manganese ore with a 27% to 40% manganese content. Ultimately, there will be a number of factors that will determine the level of manganese exposure. These include:

- ◆ Workers vs. residents
- ◆ The concentration of actual elemental manganese in the ore
- ◆ The volume and particle size of the wind dispersible dust present in the ore
- ◆ The type concentration of gangue materials present in the ore
- ◆ The strength and direction of the wind

- ◆ The effectiveness of dust control measures (i.e. dust suppression, use of tarpaulins, wind breaks, etc.)

Based on existing information, it is safe to say that acute exposure to specifically the manganese component of ore dust will not have severe or lasting negative effects. The human body has the ability to rid itself of manganese and the effects of exposure are thus mostly reversible (Duka et al., 2011; ATSDR, 2012). The half-life of manganese in blood is for example less than 5 minutes, while in tissue it can be between 36 and 41 days (Coombs and Schillack, 2005).

Airborne exposure limits to manganese dust set by various countries and organisations differ. The Occupational Safety and Health Administration (OSHA) and Namibian Labour Act regulations set an exposure limit of 5 mg/m<sup>3</sup> manganese per 8 hour exposure period for workers. The Agency for Toxic Substances and Disease Registry (USA) set the Minimum Risk Level of manganese in air for chronic exposure (365 days) at 0.0003 mg/m<sup>3</sup> (ATSDR, 2012) while the World Health Organization (WHO, 2001) set the exposure level at 0.00015 mg/m<sup>3</sup>.

Given the potential toxicity of the manganese in the ore, the precautionary approach should be followed and all operations should be aimed at creating zero dust. Apart from manganese in ore dust, silicates and asbestos may be present that can also impact on the health of workers and residents, should it not be successfully contained. Thus even more so the need for zero dust emissions.

In addition to possible ore dust impacts, exhaust gases may also deteriorate air quality in town. Exhaust gases typically contain nitrogen (67%), carbon dioxide (12%), water (11%), oxygen (9%) and pollutant emissions (1%) that include carbon monoxide, hydrocarbons, nitrogen oxides, sulphur dioxide and particulate matter (Resitoglu and Altinisik, 2015). While carbon dioxide contributes to the greenhouse effect and climate change, it is the 1% pollutant emissions that are typically a health concern. Due to the frequent strong winds of Lüderitz, these gases and particulate matter are expected to disperse quickly, but may accumulate during periods of no or very calm winds.

## 9.5 MARINE IMPACTS

Manganese occurs naturally in the marine environment and is required in trace amounts by marine organisms. However, excessive exposure to especially dissolved manganese leads to bio-concentration of the metal in marine organisms (Pinsino et al., 2012). This is especially the case in marine invertebrates where bio-concentration factors (BCF) of between 10,000 and 40,000 have been recorded (ATSDR, 2012). This means that the concentration of manganese in invertebrates is between 10,000 and 40,000 times higher than the surrounding seawater. Manganese uptake by organisms in marine environments increase with increased water temperature and salinity and decreased pH (Baden et al., 1995).

Marine invertebrates like crustaceans and molluscs are sensitive to manganese exposure (Pinsino et al., 2012). Therefore the abalone and oyster mariculture industry as well as the rock lobsters in the Lüderitz Rock Lobster Sanctuary will be at risk if significant manganese pollution of the environment occurs. In marine organisms, excessive exposure to manganese also results in neurological and immune system impacts. Studies have for example shown that manganese typically accumulate in the haemolymph and body tissue of lobsters and that it results in impairment of antennular flicking activity which in turn leads to disorientation and reduced food location ability (Baden & Neil, 1998; Krång and Rosenqvist, 2006).

From literature it seems evident that manganese accumulation within an organism's organs eventually reaches a plateau. However, the rates of accumulation increase exponentially with increased exposure concentrations. Thus, at low manganese concentrations in water, the plateau will only be reached after weeks of chronic exposure. At high concentrations the plateau are reached very fast and in a species of bivalve it was shown to be reached within three days (Pinsino et al., 2012). Luckily, the rate of removal of manganese from the tissues of the organisms also occur rapidly once exposure to manganese cease. It is only in the shells of marine invertebrates

where manganese may remain for longer periods. However, sequestration of toxins in shells is a common safety mechanism employed to prevent harmful effects of exposure in these animals.

The Benguela Current Large Marine Ecosystem (BCLME) water and sediment quality guidelines makes no provision for manganese. However, the WHO has set the Hazardous Concentration 5 value at 50% confidence (HC5(50)) for manganese in marine water at 0.4 mg/litre. This is the “hazardous concentration to protect 95% of species with 50% confidence — a “safe” value to ensure protection against chronic toxicity for most marine species” (Howe et al., 2004). However, acute exposure values may be set much higher, since organisms’ seems to be able to rid themselves of manganese quite rapidly after exposure. For example, Canada has set a short-term bench mark value at 3.6 mg/litre and a long-term guideline of 0.43 mg/litre (Canadian Council of Ministers of the Environment, 2019).

## **9.6 TERRESTRIAL ECOLOGY AND AVIFAUNA IMPACTS**

The operations of the CUMET in itself are not likely to present terrestrial ecology impacts as it will be located in an already disturbed urban environment. The project in its entirety however, is likely to have terrestrial ecology impacts, mainly linked to the transport component which can result in truck / train – wild animal collisions. Brown hyenas and the wild horses of the Namib are the most serious concern between Aus and Lüderitz.

Birds may be impacted by bright lighting used at night. Birds like flamingos fly at night and may become disorientated or blinded resulting in collisions with manmade structures. Birds nesting or roosting on the warehouse may cause a negative visual impact as a result of excreta accumulating on structures and this may increase corrosion rates of these structures.

## **9.7 TRAFFIC IMPACTS**

Traffic impacts related to the operations of the CUMET in itself will be limited to traffic congestion within the harbour, at the Namport main gate, and at the rail level crossing where the railway line enters the harbour. The project in its entirety however, will have traffic impacts in Lüderitz and on the national roads and towns along the way.

Vehicle traffic will also be responsible for noise. The most noise is generated when trucks accelerate, decelerate or drive over speed calming structures (e.g. speed bumps).

## **9.8 CUMULATIVE IMPACTS RELATED TO TRANSPORT AND THE TOWN**

The Proposed project cannot realise without an increase in road transport to move ore from the mines to the port. This will have cumulative impacts on the town and region, given the already established transport industry moving goods to and from the port. Such cumulative impacts will mostly be related to traffic congestion and incidents, road wear and tear, noise and greenhouse gases.

The predicament in Lüderitz is that it was primarily founded as a harbour town with the transport infrastructure developed to service mainly the port, but it has since also developed as a favourite tourist destination in Namibia. Also, due to decades of relatively limited port operations, frequent tourists, business operators and inhabitants have gotten used to the specific sense of place of the town. Such consciousness is at times not aligned with the current developments and expansion of activities in the port, and thus in the town. Furthermore, the fact that Namibia has only two ports, which are strategic assets, port development cannot be prohibited in lieu of the town’s sense of place. But, tourism has become one of, if not the most important, key economic drivers of Namibia. Thus, the tourism sector of Lüderitz should also be considered and protected at all times. Similarly, fisheries and mariculture are important economic drivers for Lüderitz, which must also be protected.

Reaching a compromise between harbour development and maintaining the town’s sense of place, will not require the efforts of only individual stakeholders, such as, in this case, the Proponent or particular IAPs, but will require the collective input and efforts by all stakeholders. Such stakeholders include, but is not limited to, Namport, various port users and tenants, the



Town Council, the Namibia Tourism Board, the Hospitality Association of Namibia, Ministry of Environment, Forestry and Tourism (especially Directorate of Tourism), parastatals such as Roads Authority and TransNamib, and importantly the local community. Addressing the impact on sense of place in this report is thus not limited to the operations of the Proponent only, but is considering the entire project in conjunction with all other harbour and industrial developments in town.

## 10 ASSESSMENT AND MANAGEMENT OF IMPACTS

The purpose of this section is to assess and identify the most pertinent environmental impacts that are expected from the operational, construction (upgrades, maintenance, etc. – see glossary for “construction”) and potential decommissioning activities of the facility. An EMP based on these identified impacts are also incorporated into this section.

For each impact an Environmental Classification was determined based on an adapted version of the Rapid Impact Assessment Method (Pastakia, 1998). Impacts are assessed according to the following categories: Importance of condition (A1); Magnitude of Change (A2); Permanence (B1); Reversibility (B2); and Cumulative Nature (B3) (see Table 10-1).

Ranking formulas are then calculated as follow:

$$\text{Environmental Classification} = A1 \times A2 \times (B1 + B2 + B3)$$

The environmental classification of impacts is provided in Table 10-2.

The probability ranking refers to the probability that a specific impact will happen following a risk event. These can be improbable (low likelihood); probable (distinct possibility); highly probable (most likely); and definite (impact will occur regardless of prevention measures).

**Table 10-1. Assessment criteria**

Criteria	Score
<b>Importance of condition (A1) -assessed against spatial boundaries of human interest it will affect</b>	
Importance to national/international interest	4
Important to regional/national interest	3
Important to areas immediately outside the local condition	2
Important only to the local condition	1
No importance	0
<b>Magnitude of change/effect (A2) -measure of scale in terms of benefit / disbenefit of an impact or condition</b>	
Major positive benefit	3
Significant improvement in status quo	2
Improvement in status quo	1
No change in status quo	0
Negative change in status quo	-1
Significant negative disbenefit or change	-2
Major disbenefit or change	-3
<b>Permanence (B1) -defines whether the condition is permanent or temporary</b>	
No change/Not applicable	1
Temporary	2
Permanent	3
<b>Reversibility (B2) -defines whether the condition can be changed and is a measure of the control over the condition</b>	
No change/Not applicable	1

Reversible	2
Irreversible	3
<b>Cumulative (B3) -reflects whether the effect will be a single direct impact or will include cumulative impacts over time, or synergistic effect with other conditions. It is a means of judging the sustainability of the condition – not to be confused with the permanence criterion.</b>	
Light or No Cumulative Character/Not applicable	1
Moderate Cumulative Character	2
Strong Cumulative Character	3

**Table 10-2. Environmental classification (Pastakia 1998)**

<b>Environmental Classification</b>	<b>Class Value</b>	<b>Description of Class</b>
72 to 108	5	Extremely positive impact
36 to 71	4	Significantly positive impact
19 to 35	3	Moderately positive impact
10 to 18	2	Less positive impact
1 to 9	1	Reduced positive impact
0	-0	No alteration
-1 to -9	-1	Reduced negative impact
-10 to -18	-2	Less negative impact
-19 to -35	-3	Moderately negative impact
-36 to -71	-4	Significantly negative impact
-72 to -108	-5	Extremely Negative Impact

### **10.1 RISK ASSESSMENT AND ENVIRONMENTAL MANAGEMENT PLAN**

The EMP provides management options to ensure impacts of the facility is 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 facility. This section of the report can act as a stand-alone document. All personnel taking part in the operations of the facility should be made aware of the contents in this section, so as to plan the operations accordingly and in an environmentally sound manner.

The objectives of the EMP are:

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

Various potential and definite impacts will emanate from the operations, construction and decommissioning phases. The majority of these impacts can be mitigated or prevented. The impacts, risk rating of impacts as well as prevention and mitigation measures are listed below.

As depicted in the tables below, impacts related to the operational phase are expected to mostly be of low to medium significance and can mostly be mitigated to have a low significance. The extent of impacts are mostly site specific to local and are not of a permanent nature. Due to the nature of the surrounding areas, cumulative impacts are possible and include noise pollution and traffic impacts.

### 10.1.1 Planning

During the phases of planning for construction, operations and decommissioning of the facility, it is the responsibility of proponent to ensure they are and remain compliant with all legal requirements. The proponent 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 various other phases of the project:

- ◆ Ensure that all necessary permits from the various ministries, local authorities and any other bodies that governs the construction (maintenance) and operations of the facility are in place and valid.
- ◆ Ensure all appointed contractors and employees enter into an agreement which includes the EMP. Ensure that the contents of the EMP are understood by the contractors, sub-contractors, employees and all personnel present or who will be present on site.
- ◆ Make provisions to have a Health, Safety and Environmental Coordinator to implement the EMP and oversee occupational health and safety as well as general environmental related compliance at the site.
- ◆ Have the following emergency plans, equipment and personnel on site where reasonable to deal with all potential emergencies:
  - Risk management / mitigation / EMP/ Emergency Response Plan and HSE Manuals
  - Adequate protection and indemnity insurance cover for incidents;
  - Comply with the provisions of all relevant safety standards;
  - Procedures, equipment and materials required for emergencies.
- ◆ If one has not already been established, establish and maintain a fund for future ecological restoration of the project site should project activities cease and the site is decommissioned and environmental restoration or pollution remediation is required.
- ◆ Establish and / or maintain a reporting system to report on aspects of construction activities, operations and decommissioning as outlined in the EMP.
- ◆ Submit bi-annual reports to the MEFT to allow for environmental clearance certificate renewal after three years. This is a requirement by MEFT.
- ◆ Appoint a specialist environmental consultant to update the EIA and EMP and apply for renewal of the environmental clearance certificate prior to expiry.

### 10.1.2 Contribution to the National Economy (Revenue & Investment Confidence)

The change in land use will lead to changes in the way revenue is generated and paid to the national treasury. The construction of the CUMET and associated infrastructure will see considerable investment into the local economy. During the operational phase, manganese ore originating from South Africa will be exported to world markets. Various activities involved with the logistics chain to achieve this will generate significant revenue for Namibia and South Africa. The successful implementation of the project, and related return on investment, will boost investors' confidence in Namibia and southern Africa in general. It will further contribute to Namibia's sustainability goals of Vision 2030 and the related development goals of NDP5. The project will contribute to the stimulation of growth and localised expenditure in Lüderitz and the region.

Use of National infrastructure, such as the B4 Main Road and the Port of Lüderitz will maximise potential of such infrastructure, however will also increase its maintenance and upkeep, which is considered to be a cumulative, indirect impact associated with this and other development projects.

Project Activity/Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Contribution to national, regional and local economies.	3	2	2	2	3	42	4	Definite
Daily Operations	Contribution to national, regional and local economies.	4	3	2	2	3	84	5	Definite
Indirect Impacts	Contribution to sustainable development and investors' confidence.	3	1	3	3	3	27	3	Definite

**Desired Outcome:** Contribution to national treasury, a positive trade balance and increased economic resilience in the town, region, Namibia and SADC as a whole.

#### **Actions**

##### **Enhancement:**

- ♣ Maximise contribution to the Namibian economy by using Namibian contractors, suppliers and goods if available. Deviation from this practice should be justified.
- ♣ Continued communication to local, regional and national authorities related project development and advancement to ensure operations are included in planning and maintenance initiatives.

##### **Responsible Body:**

- ♣ Proponent
- ♣ Contractors

##### **Data Sources and Monitoring:**

- ♣ Keep records of contracts or agreements with suppliers and service providers.

### 10.1.3 Employment, Remuneration and Spending Power

An increase in semi-skilled, skilled and professional labour will result from the construction and operations of the CUMET. Successful implementation of the project is hinged on continued employment of labourers and contractors. Employees of the Proponent and of contractors will be remunerated and this increases their economic stability which in turn increases their economic resilience. Spending power in Lüderitz and the region will increase and this will benefit various business and create opportunities for diversification of business activities.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Daily Operations	Employment and contribution to local economy	2	2	2	2	2	24	3	Definite
Indirect Impacts	Decrease in unemployment in the town, region and Namibia as a whole	3	2	2	2	2	36	4	Definite

**Desired outcome:** Reduced unemployment, poverty and an increase in business opportunities.

#### Actions

##### **Enhancement:**

- Appoint local contractors with a predominantly Namibian employee base as well as employ local Namibians where possible. Deviations from this must be justified. Thus, if the skills exist locally, employees must first be sourced from the town, then the region and then nationally.
- Adhere to Labour Act requirements with regard to employment contracts and remuneration.

##### **Responsible Body:**

- Proponent
- Contractors

##### **Data Sources and Monitoring:**

- Financial records of contributions to social security and employees' salaries on file.
- Bi-annual report based on employee records.

#### 10.1.4 Skills, Technology and Development

During the phases of construction and operations, a portion of the workforce will be trained and / or gain experience. Skills will be transferred to an unskilled workforce for general tasks. The technology required for the development of the facility will be new to the local industry, aiding in operational efficiency. Development of people and technology are key to economic development.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Technological development and transfer of skills	2	2	2	3	1	24	3	Definite
Daily Operations	Training and transfer of skills	3	1	2	3	2	28	3	Definite
Indirect Impacts	Economic development	3	1	2	3	3	32	3	Definite

**Desired Outcome:** To see an increase in skills in Lüderitz, as well as development and technology advancements in the logistics and port industries.

#### Actions

##### **Enhancement:**

- If the skills exist locally, contractors and employees must first be sourced from the town, then the region and then nationally. Deviations from this practice must be justified.
- Skills development and improvement programs to be made available as identified during performance assessments.

##### **Responsible Body:**

- Proponent
- Contractors

##### **Data Sources and Monitoring:**

- Record should be kept of training provided.
- Ensure that all training is certified or managerial reference provided (proof provided to the employees) inclusive of training attendance, completion and implementation.

### 10.1.5 Ideals and Aspirations for the Future

During the environmental assessment, public consultation was conducted with neighbours and interested and or affected parties. Information shared with the parties resulted in a change in aspirations for the future. Concerns were raised related to the increased noise and traffic and this negatively affected aspirations. However, local community members and job seekers remain hopeful that the project will provide additional employment opportunities and this positively affected aspirations.

Project Activity/Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Planning /Construction /Operation	Information sharing about proposed expansion and related possible environmental constraints	2	1	2	2	1	10	2	Definite
Indirect Impacts	Knowledge of economic and development activities in the area	2	1	3	3	1	14	2	Definite

**Desired Outcome:** Continued sharing of activity plans with IAPs and governing agencies. Maintaining an open door policy with neighbours and employees.

#### Actions

##### **Enhancement:**

- Information about the project (planning, construction and operations) should continuously be made available to authorities and interested and affected parties.
- Open communication regarding future development and employment opportunities to employees and job seekers, through employees' management structures.

##### **Responsible Body:**

- **Proponent**

##### **Data Sources and Monitoring:**

- Records kept of all information shared with authorities, neighbours and employees

### 10.1.6 Demographic Profile and Community Health

The project is reliant on labour during the construction and operational phase. The scale of the project is limited and it is not expected to create a significant change in the demographic profile of the local community. However, new developments can attract jobseekers to the Lüderitz that can increase unemployment in the area.

Community health may be exposed to factors such as communicable disease like HIV/AIDS and alcoholism / drug abuse, often associated with the trucking industry (transport of goods). Additional spending power in a community with high addiction rates, alcoholism and gender based violence, can increase such societal deviances.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Social ills related to unemployment, the trucking of goods and increased spending power	2	-1	1	1	2	-8	-1	Probable
Daily Operations	Social ills related to unemployment, the trucking of goods and increased spending power	2	-1	1	2	2	-10	-2	Probable
Indirect Impacts	The spread of diseases	3	-1	2	2	2	-18	-2	Probable

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

#### **Actions:**

##### **Prevention:**

- Employ only local people from the area, deviations from this practice should be justified appropriately.
- Adhere to all local authority by-laws relating to environmental health.
- Appointment of reputable contractors where applicable.
- Provide educational, awareness information for employees on various topics of social behaviour, HIV/AIDs, financial responsibility, etc.
- Adhere to all Covid-19 protocols of social distancing, sanitizing, wearing of masks and self-isolation.
- Employment contracts to clearly stipulate disciplinary steps, within the legal parameters of Namibia, to be taken for socially deviant behaviour during working hours.

##### **Mitigation:**

- Disciplinary steps, within the legal parameters of Namibia, to be taken for socially deviant behaviour during working hours.

##### **Responsible Body:**

- Proponent

##### **Data Sources and Monitoring:**

- Facility inspection sheet 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.



### 10.1.7 Traffic

Construction of the warehouse will result in some traffic impacts when building materials and equipment are transported to the site. These impacts will be temporary. The CUMET operations will be within the Port of Lüderitz. Operations directly related to the facility will have some traffic impacts within the port itself. This can be in the form of traffic congestion and an increased risk of collisions or accidents. Traffic congestion and delays with an increased risk of collisions or accidents can occur at the gates and rail level crossing and this can impact surrounding streets, especially Hafen-, Bismarck-, Moltke- and Bahnhof-Street.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Delivery of equipment and building supplies	1	-1	2	2	2	-6	-1	Definite
Daily Operations	Increase in traffic, road wear and tear and accidents related to CUMET operations only	2	-2	2	2	3	-28	-3	Definite

**Desired Outcome:** Minimum impact on traffic in and immediately around the port and no transport or traffic related incidents.

#### Actions

##### **Mitigation:**

- Trucks delivering goods should not be allowed to obstruct any traffic at the port entrance.
- Trucks associated with the facility should not be allowed to park or overnight in the town, and may only overnight at areas designated for this purpose.
- If any traffic impacts are expected, traffic management should be performed.
- Place signs to warn and direct traffic within the port and at and around the warehouse.

##### **Responsible Body:**

- Proponent
- Contractors

##### **Data Sources and Monitoring:**

- The Road Traffic and Transport Regulations, 2001
- Any complaints received regarding traffic issues in the port or at its entrances, should be recorded together with action taken to prevent impacts from repeating itself.
- A bi-annual report should be compiled of all incidents reported, complaints received, and action taken.

### 10.1.8 Employee Health and Safety (Warehouse and Quayside)

The various construction and operational activities associated with the project are performed by employees who are exposed to occupational health and safety risks of varying degrees. Activities such as the operations of machinery, working at heights, vehicular traffic, falling objects, exposure (mainly inhalation) to manganese ore dust, falling into the ocean and potential hypothermia or drowning, exposure to chemicals used during construction or operations (fuel, paint, cleaning materials, etc.), poses the main risks to employees.

Chronic exposure to low levels of manganese ore dust presents the greatest risk to employees working within the CUMET warehouse. The risk is not only related to the manganese per se, but also to the potentially harmful gangue materials that comprise the bulk of the ore. Since the gangue materials present are not necessarily known, but could potentially include for example asbestos, it is crucial that the inhalation / ingestion of dust is prevented at all times.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Physical injuries, exposure to chemicals	1	-2	3	2	1	-12	-2	Probable
Daily Operations	Physical injuries, exposure to chemicals and manganese ore dust	2	-3	3	2	2	-42	-4	Probable

**Desired Outcome:** To prevent injury and health impacts. Specifically exposure to manganese ore dust must be prevented.

#### Actions

##### **Prevention:**

- All Health and Safety standards specified in the Labour Act should be followed. This includes, but is not limited to, the exposure limit for manganese in the work place which is the time weighted average of 5 mg/m<sup>3</sup> for a 40 hour work week.
- Clearly label and demarcate dangerous and restricted areas, equipment and products.
- Dust suppression must be performed diligently.
- Provide all employees with required and adequate personal protective equipment (PPE) including dust masks and protective clothing for workers in close proximity to, or working with, the manganese ore. Accidental inhalation, ingestion, dermal or eye contact with ore dust must be prevented at all times.
- Ensure that all employees receive adequate training on operations of equipment and handling of manganese ore or any hazardous substances that may be present on site.
- Employees should be informed on the potential dangers of inhaling manganese ore dust to ensure they conscientiously wear PPE at all times.
- Service, maintain and repair all equipment regularly, as failing machinery and equipment can be potential causes of injury.

##### **Mitigation:**

- Implement and maintain an integrated health and safety management system, to act as a monitoring and mitigating tool, which includes operational, safe work and medical procedures, permits to work, emergency response plans, housekeeping rules, MSDS's and signage requirements (PPE, flammable etc.).
- Selected personnel should be trained in first aid and first aid kits must be available on site.
- The contact details of all emergency services must be readily available / displayed for use in emergency situations.
- Emergency wash stations in case of accidental exposure to chemicals or manganese ore dust.

**Responsible Body:**

- ◆ Proponent
- ◆ Contractors
- ◆ Namport

**Data Sources and Monitoring:**

- ◆ Air quality monitoring must be conducted on site and at the port to monitor ore dust fallout. If air quality deteriorates or complaints are received, it should be investigated and mitigation measures implemented or improved. Monitoring to be coordinated by Namport.
- ◆ From MSDS and analysis reports of ore, as obtained from the mines, ascertain that no asbestos is present in ore. Should asbestos be detected, all operations must only be continued under very strict and approved health and safety procedures related to the handling of asbestos containing material.
- ◆ Any incidents must be recorded with action taken to prevent future occurrences.
- ◆ A bi-annual report should be compiled of all incidents reported. The report should contain dates when training were conducted and when safety equipment and structures were inspected and maintained.

### 10.1.9 Air Quality Related Impacts

Reduced air quality as a result of exhaust gases (greenhouse gases) of a large number of trucks visiting the port during construction and operations. This may have localised health impacts, but are expected to disperse relatively quickly due to the frequent high velocity south-westerly winds in Lüderitz. It will however still contribute to greenhouse gas emissions that in turn contribute to climate change. In terms of greenhouse gas emissions from trucks, it is the project in its entirety that should be considered. It is thus the responsibility of all stakeholders to implement strategies and measures to curb the release of greenhouse gases. The Proponent's contribution to greenhouse gas emissions will be minimal.

Air quality as a result of windblown ore dust can cause health effects, especially through chronic inhalation of such dust, in the nearby communities. The risk is not only related to the manganese per se, but also to the potentially harmful gangue materials that comprise the bulk of the ore. Since the gangue materials present are not necessarily known, but could potentially include for example asbestos, it is crucial that the inhalation / ingestion of dust is prevented at all times. Sources of such dust can be from trucks and rail cars not suitably covered, escape of dust from the warehouse when the doors are opened, dust escaping the ship belt loading system, dust escaping from skips between the warehouse and the barge during interim skip loading phase, dust escaping from the barge during loading, dust carried onto paved quayside surfaces by truck wheels, and dust remaining in the emptied skips (interim loading phase) and then becoming airborne in strong winds as skip is returned to the quay.

Windblown dust may reach nearby fishing vessels and contaminate their cargo during offloading. Prevailing winds will carry dust, if not contained to the north of the harbour. Winds from the northwest to east may carry uncontained dust to buildings which can over time cause discoloration of paint, especially in moist environments.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Increase in greenhouse gases and its contribution to reduced air quality and climate change	4	-1	2	2	1	-20	-3	Probable
Daily Operations	Exposure to manganese ore dust and its subsequent inhalation and/or ingestion and inhalation of exhaust gases. Impacts on fishing vessels and mariculture industry.	3	-2	2	2	2	-36	-3	Probable
Indirect and cumulative Impact	Damage to historically significant buildings as a result of exhaust gases resulting in acid deposition, ozone and soot build-up	3	-2	2	3	2	-42	-4	Probable

**Desired Outcome:** To prevent health impacts in humans and the seafood industry. To maintain the integrity of the built environment, especially historically significant buildings. To reduce greenhouse gas emissions.

#### Actions

##### **Prevention:**

- ◆ Receive ore from reputable contractors/transporters who prioritise a “zero dust policy” and who operates in line with the requirements of Namport. For example, operators who ensure all loads are suitably covered to prevent fly-off dust from the load bin. This include empty trucks/rail cars that may still contain some dust.

- ◆ At the warehouse dust suppression using a purpose built fresh water dust suppression system must be performed diligently. This will also decrease the escape of dust from skips and during loading of the barge.
- ◆ Skip loading should be an interim operation and a fully enclosed belt loading system should be installed as soon as possible.
- ◆ During skip loading, the following measures should be implemented to prevent dust:
  - ore should be sufficiently damp when loaded into the skip to minimize the escape of dust during loading of the barge
  - the skip should be lowered to tank top before being emptied
  - skips should be completely emptied before being lifted out of the barge's hold
  - if dust problems persist after all the mitigation measures have been implemented, dust suppression systems such as a dry fog system can be installed on the barge or brooming down of skips whilst in the ship's hold can be contemplated.
- ◆ The belt loading system should be designed to prevent the escape of dust and this should include the following:
  - the hopper must be located inside the warehouse
  - the entire system should be enclosed
  - it should be fitted with water spray bars or dust filters to wet the ore or filter dust
  - it should be fitted with a chute/spout to deliver the ore to tank top
  - if dust problems persist after all the mitigation measures have been implemented, dust suppression systems such as a dry fog system can be installed on the barge.
- ◆ The quay areas that becomes contaminated by dust must be regularly cleaned to, not only prevent dust becoming airborne, but also to prevent such dust from entering the ocean in runoff water.

**Mitigation:**

- ◆ Cease any operations with immediate effect once dust plumes that cannot be contained persist. Operations can commence once sufficient mitigation measures have been implemented or when the cause of dust disseminates.

**Responsible Body:**

- ◆ Proponent
- ◆ Contractors
- ◆ Namport

**Data Sources and Monitoring:**

- ◆ Air quality monitoring must be conducted on site and at the port to monitor ore dust fallout. If air quality deteriorates or complaints are received, it should be investigated and mitigation measures implemented or improved. Monitoring to be coordinated by Namport.
- ◆ From MSDS and analysis reports of ore, as obtained from the mines, ascertain that no asbestos is present in ore. Should asbestos be detected, all operations must only be continued under very strict and approved health and safety procedures related to the handling of asbestos containing material.
- ◆ Any incidents must be recorded with action taken to prevent future occurrences.
- ◆ A bi-annual report should be compiled of all incidents reported and monitoring performed. The report should contain dates when safety equipment and structures were inspected and maintained.

### 10.1.10 Site Security

Security risks are related to unauthorized entry, theft and sabotage. Namport has strict security measures and access control in place. Access to the warehouse and surrounds must still be controlled to prevent unauthorised access, during both construction and operations.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Criminal activities and unauthorised access	1	-2	2	2	1	-10	-2	Probable
Daily Operations	Criminal activities and unauthorised access	1	-2	2	2	1	-10	-3	Probable

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

#### **Actions**

##### **Prevention:**

- Security procedures and proper security measures must be in place to protect workers and cargo.
- Strict security that prevents unauthorised entry during all phases should be practiced, with access logs for vehicles and personnel.

##### **Responsible Body:**

- Proponent
- Contractors

##### **Data Sources and Monitoring:**

- Any incidents must be recorded with action taken to prevent future occurrences.
- A bi-annual report should be compiled of all incidents reported.

### 10.1.11 Fire

Construction and operational and activities may increase the risk of the occurrence of fire, especially when flammable materials (chemicals, fuels, waste) are stored on site or if faulty electrical equipment are used.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Fire risk	1	-1	2	2	1	-5	-1	Improbable
Daily Operations	Fire risk	1	-1	2	2	1	-5	-1	Improbable

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

#### **Actions:**

##### **Prevention:**

- Maintain regular site, mechanical and electrical inspections and maintenance.
- Clean all spills / leaks.
- Regularly dispose of waste.
- A holistic fire protection and prevention plan is needed. This plan must include an emergency response plan and firefighting plan.
- Maintain firefighting equipment, good housekeeping and personnel training (firefighting, fire prevention and responsible housekeeping practices).

##### **Mitigation:**

- Implement emergency response plan and firefighting plan if a fire is detected.

##### **Responsible Body:**

- Proponent
- Contractors

##### **Data Sources and Monitoring:**

- A register of all incidents must be maintained on a daily basis. This should include measures taken to ensure that such incidents do not repeat themselves.
- A bi-annual report should be compiled of all incidents reported. The report should contain dates when fire drills were conducted and when fire equipment was tested and training given.

### 10.1.12 Noise

Ports are noisy operations by nature and typically operate 24 hours a day. Noise pollution will exist due to heavy motor vehicles and trains accessing the site and earthmoving equipment moving and loading ore in the warehouse. The envisioned interim skip operations will create noise as the skips are handled during loading of the barge. The belt loading system is envisioned to create less noise. Excessive noise, apart from being a nuisance to residents, may deter tourists from visiting certain existing tourist establishments or Lüderitz in general.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Excessive noise generated from construction activities – nuisance and hearing loss	1	-1	2	2	1	-5	-1	Probable
Daily Operations	Noise generated from the transport and operational activities – nuisance	3	-2	2	2	2	-36	-4	Definite

**Desired Outcome:** To prevent hearing loss among workers and minimize noise related nuisance at nearby residences, tourism establishments and businesses.

#### Actions

##### **Prevention:**

- Follow World Health Organization (WHO) guidelines on maximum noise levels (Guidelines for Community Noise, 1999) to prevent hearing impairment and be a nuisance to nearby receptors.
- All machinery, for example the belt loading system must be regularly serviced to ensure minimal noise production.
- During skip operations, ensure that crane operators are well trained and that they handle the skips carefully and that noise dampening material (e.g. rubber sheets) are placed on the quay where empty skips will be returned.
- Switch to white noise audible alarms on vehicles and machinery like forklifts operating in the port, especially for after hour operations.

##### **Mitigation:**

- Hearing protectors as standard PPE for workers in situations with elevated noise levels.

##### **Responsible Body:**

- Proponent
- Contractors

##### **Data Sources and Monitoring:**

- WHO Guidelines
- Maintain a complaints register and investigate noise levels and take corrective action if needed.
- Bi-annual report on complaints and actions taken to address complaints and prevent future occurrences.



### 10.1.13 Waste production

Various forms of waste will be produced during the construction and operational phases. Waste can be classified as hazardous and non-hazardous waste. Soil or water contaminated by for example hydrocarbons must be treated as hazardous waste.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Excessive waste production, littering, illegal dumping, contaminated materials	1	-2	2	2	2	-12	-2	Definite
Daily Operations	Excessive waste production, littering, contaminated materials	1	-2	2	2	2	-12	-2	Definite

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

#### Actions

##### **Prevention:**

- A waste management plan must be developed.
- Waste reduction measures should be implemented and all waste that can be re-used / recycled must be kept separate.
- All employees must be educated on the importance of not littering.
- Ensure adequate waste disposal storage facilities are available.
- Ensure waste cannot be blown away by strong winds.
- Prevent scavenging (human and non-human) of waste at the storage site.
- See the material safety data sheets available from suppliers for disposal of contaminated products and empty containers.
- Liaise with the town council regarding waste and handling of hazardous waste.

##### **Mitigation:**

- 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).

##### **Responsible Body:**

- Proponent
- Contractors

##### **Data Sources and Monitoring:**

- A register of hazardous waste disposal should be kept. 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.

#### 10.1.14 Ecosystem and Biodiversity Impact - Terrestrial

The area earmarked for warehouse construction has already been disturbed. No impacts on the terrestrial ecosystem and biodiversity are expected from its construction. Birds may nest or roost on the warehouse infrastructure. Bright lights may disorientate birds flying at night and cause collisions with manmade structures.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Daily Operations	Impact on birds	2	-2	2	2	2	-24	-3	Probable

**Desired Outcome:** To avoid bird impacts.

#### Actions:

##### **Prevention:**

- Reduce the numbers and intensity of lights at night to the minimum.
- Down-shielding security lighting for on-ground facilities and equipment to keep light within the boundaries of the site.
- Report any extraordinary sightings to the MEFT.
- Measures related to waste handling and the prevention of groundwater, surface water and soil contamination should limit ecosystem and biodiversity impacts.
- Avoid scavenging of waste by fauna, mainly birds.
- The establishment of habitats and nesting sites at the facility should be prevented where possible.

##### **Responsible Body:**

- Proponent

##### **Data Sources and Monitoring:**

- Keep record of any bird collisions with manmade structures.
- All information and reporting to be included in a bi-annual report.

### 10.1.15 Ecosystem and Biodiversity Impact - Marine

Any impacts on the marine environment which will mainly be related to dust and the accidental spillage of manganese ore into the ocean during ship loading activities.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Daily Operations	Marine contamination by manganese ore.	2	-2	2	2	2	--24	-3	Probable

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

#### Actions.

##### **Prevention:**

- Loading of ships should be performed by responsible and well experienced operators of equipment.
- Dust suppression systems to be implemented.
- All ships to be loaded on the northern end of the quay wall.
- Loading activities must cease when dust plumes become visible outside of the ship's cargo hold and only be continued once mitigation measures have been implemented.

##### **Mitigation:**

- The quay areas that becomes contaminated by dust must be regularly cleaned to prevent such dust from entering the ocean in runoff water.

##### **Responsible Body:**

- Namport
- Contractors
- Proponent

##### **Data Sources and Monitoring:**

- Air quality monitoring must be conducted at the port to monitor ore dust fallout. Monitoring to be coordinated by Namport.
- All information and reporting to be included in a bi-annual report.

### 10.1.16 Groundwater, Surface Water and Soil Contamination

During construction and operations some chemicals will be present on site. Excavators, front-end loaders and trucks contain fuel, oil and hydraulic fluids that may leak. Operations entail the storage and handling of manganese ore. Manganese ore, its dust and other contaminants that are not contained in the warehouse, or generated during handling, can contaminate the environment. The main receptor is the ocean (surface water) while groundwater and soil will be protected by the impermeable surface covering of the port quay and operational areas. Surface water contamination can carry pollutants to sensitive receptors such as nearby mariculture areas and rocky shores.

Surface runoff contaminated with manganese ore / dust, either from wash water, dust suppression or rain water, can enter the ocean, sewers or storm water drains if not contained.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Contamination from hazardous material spillages and hydrocarbon leakages	2	-1	2	2	1	-10	-2	Probable
Daily Operations	Contamination from hazardous material spillages, hydrocarbon leakages and manganese ore and its dust washing or blowing into the ocean	2	-2	2	2	2	-24	-3	Probable

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

#### Actions

##### **Prevention:**

- Any hydrocarbon spill from heavy motor vehicles and machinery must be cleaned immediately.
- Drip trays must be readily available should a vehicle or machine start leaking.
- Vehicles should not be serviced or repaired on site. Drip trays must be used at all times if repairs must be conducted on site.
- All dust control measures as per the air quality management parameters (section 10.1.9) should be employed at all times to prevent surface water contamination.
- Water used for dust suppression should never be used in excessive amounts that may result in pooling or runoff of a water / manganese dust mixture.
- The exit of the warehouse must be equipped with rumble grids to dislodge any manganese ore nuggets that may be lying on the trailer frame of trucks leaving the warehouse, or that are stuck between the wheels. This will not only keep the area around the warehouse clean, but will also prevent nuggets of ore from becoming dislodged while traveling through town and on the national roads. This will prevent potential damage to vehicles or accidents involving other users of the roads.
- If required, visual inspection and removal of ore nuggets from the departing trucks should be conducted in conjunction with the rumble grids.
- Contaminated water must be prevented from entering any storm water drain or sewer and must be handled and discarded as hazardous waste.
- The procedures followed to prevent environmental damage during construction and operations, and compliance with these procedures, must be audited and corrections made where necessary.
- Proper training of operators must be conducted on a regular basis.

**Mitigation:**

- Spilled manganese ore or dust on the quay and around the warehouse must be cleaned regularly to reduce the possibility of such products becoming airborne or forming part of runoff into the ocean.
- Action must be taken immediately for all instances where ore dust is not contained. Dust causing actions must be halted and corrective measures implemented.
- Any spill must be cleaned up immediately.

**Responsible Body:**

- Proponent
- Contractors

**Data Sources and Monitoring:**

- Keep record of any complaints received and incidents occurred and investigate such complaints/ incidents and take corrective action to prevent future occurrences.
- A report should be compiled bi-annually of all monitoring conducted.

### 10.1.17 Impacts on Local Utilities and Infrastructure

Any damage caused to existing infrastructure and services supply like water or electricity where present during the construction phase, may lead to disruption of such services. During operations trucks can collide with infrastructure in the port.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction Phase	Disruption of services and damage to existing infrastructure	2	2	2	2	1	-20	-3	Probable
Daily Operations	Disruption of services and damage to existing infrastructure	2	2	2	2	1	-20	-3	Probable

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

#### **Actions**

##### **Prevention:**

- Appointing qualified and reputable contractors is essential.
- The contractor must determine exactly where amenities, pipelines and cables are situated before construction commences (utility clearance e.g. ground penetrating radar surveys).
- Liaison with Namport is essential.
- Specific items that may be prone to damage by large trucks (small items that drivers cannot see like taps, drains, fire hydrants, etc.) must be clearly marked or demarcated.

##### **Mitigation:**

- Emergency procedures available on file.

##### **Responsible Body:**

- Lüderitz Town Council
- Contractors
- Proponent

##### **Data Sources and Monitoring:**

- All incidents and corrective action taken must be recorded.
- A bi-annual report should be compiled of all incidents and actions taken.

### 10.1.18 Visual Impact

During construction and operations, waste and building rubble that are not removed regularly will be unattractive. During operations, visual impacts are also related to the maintenance and upkeep of the infrastructure. This is an impact that not only relates to the aesthetic appearance, but also the integrity of the facility. The wrong choice of building materials and poorly maintained infrastructure will be prone to corrosion, especially in the corrosive environment of the Namibian coast. Corroded infrastructure may contribute to the pollution potential of the facility through the potential escape of dust from such structures.

Winds from the northwest to east may carry uncontained dust to buildings which can over time cause discoloration of paint, especially in moist environments.

Large and new infrastructure to be established on site, will be in line with the existing landscape character associated with the port and related operations.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Aesthetic appearance and integrity of the site	2	-1	2	2	2	-12	-2	Definite
Daily Operations	Aesthetic appearance and integrity of the site	2	-2	2	2	2	-24	-3	Definite

**Desired Outcome:** To minimise aesthetic impacts associated with the facility and to ensure the longevity of the infrastructure.

#### Actions

##### **Prevention:**

- During the planning phase, durable materials for the construction of the facility and the associated infrastructure should be identified and used (keep in mind the corrosive environment at Lüderitz).

##### **Mitigation:**

- Regular waste disposal, good housekeeping and routine maintenance on infrastructure will ensure that the longevity of structures are maximised and a low visual impact is maintained.

##### **Responsible Body:**

- Proponent
- Contractors

##### **Data Sources and Monitoring:**

- Keep record of all complaints received and corrective action taken.
- Keep maintenance records with dates when the next round of maintenance is scheduled.
- A bi-annual report should be compiled of all complaints received, actions taken and maintenance performed.

### 10.1.19 Sense of Place

Lüderitz, being one of the oldest and most remote towns in Namibia, has a very unique sense of place. Rich history mostly related to: old seafarers such as Bartolomeu Dias, diamond mining, characterful and historic buildings, coupled with the harsh Namibian desert environment and strong winds, contributes to the town and surroundings' characteristic. Industrial process and increased heavy motor vehicle movement and associated noise in town are contradictory to these characteristics and may thus negatively impact the sense of place.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Deteriorated sense of place due to construction activities	2	-1	2	2	1	-10	-2	Possible
Daily Operations	Deteriorated sense of place due to operational activities	2	-2	2	2	3	-42	-4	Definite

**Desired Outcome:** To minimize impacts on the sense of place of Lüderitz and surroundings.

#### **Actions**

##### **Mitigation:**

- Implementing preventative and mitigation measures related to noise, waste, traffic and visual impacts, as proposed in this EMP, will aid in ensuring that the sense of place in the immediate vicinity of the harbour does not deteriorate.

##### **Responsible Body:**

- Proponent

##### **Data Sources and Monitoring:**

- Keep record of all complaints received and corrective action taken.
- Bi-annual reports for all other impacts will give an overall assessment of the impacts on the sense of place of the construction and operational phases.



### 10.1.20 Cumulative Impact

Impacts of port operations and transport are cumulative in nature, in both a positive and negative manner. Possible positive cumulative impacts associated with the construction and operational phases include employment, more spending power and increased support for local businesses and establishments. Such cumulative impacts are not only limited to Lüderitz, but is likely to affect the //Karas Region and Namibia as a whole. While the increased traffic on the roads is generally regarded as negative, the cumulative volumes of traffic may justify road, rail, border post and other infrastructure upgrades which will not only benefit the current project, but also all other users of such services. The negative impacts of the cumulating traffic in Lüderitz are mostly linked to noise, traffic congestion and a reduction in air quality. As this is a cumulative problem involving many different stakeholders, and various transport industries, it should be a collective attempt by all parties involved to prevent or mitigate such negative impacts.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	The build-up of minor impacts to become more significant	2	-1	2	2	2	-12	-2	Probable
Daily Operations	The build-up of minor impacts to become more significant	2	-2	2	2	2	-24	-3	Definite

**Desired Outcome:** To minimise cumulative all impacts associated with the facility.

#### Actions

##### **Mitigation:**

- Addressing each of the individual impacts as discussed and recommended in the EMP would reduce the cumulative impact.
- Reviewing bi-annual reports for any new or re-occurring impacts or problems would aid in identifying cumulative impacts and help in planning if the existing mitigations are insufficient.

##### **Responsible Body:**

- Proponent (for aspects pertaining to operations of the CUMET inside the port)
- Namport (as custodian of the port, for all aspects of port operations (direct and indirect) that contribute to the cumulative impacts on the town and region)
- All stakeholders (for aspects pertaining to operations outside of the port, but linked to the project and other projects contributing to cumulative impacts)

##### **Data Sources and Monitoring:**

- Bi-annual reports for all impacts will give an overall assessment of the impact of the construction and operational phases.

## 10.2 DECOMMISSIONING AND REHABILITATION

Decommissioning is not foreseen during the validity of the environmental clearance certificate. Decommissioning was however assessed as construction activities include modification and decommissioning. Should decommissioning occur at any stage, rehabilitation of the area may be required. Decommissioning will entail the complete removal of all infrastructure including buildings and underground infrastructure not forming part of post decommissioning use. Any pollution present on the site must be remediated. The impacts associated with this phase include noise and waste production as structures are dismantled. Noise must be kept within WHO standards and waste should be contained and disposed of at an appropriately classified and approved waste facility and not dumped in the surrounding areas. Future land use after decommissioning should be assessed prior to decommissioning and rehabilitation initiated if the land would not be used for future purposes. The EMP for the facility will have to be reviewed at the time of decommissioning to cater for changes made to the site and implement guidelines and mitigation measures.

## 10.3 ENVIRONMENTAL MANAGEMENT SYSTEM

The Proponent operates within the ISO 9001 (quality) and ISO 45001 (occupational health & safety) management systems. In addition the Proponent could implement an Environmental Management System (EMS) such as ISO 14001 for their operations. An EMS is an internationally recognized and certified management system that will ensure ongoing incorporation of environmental constraints. At the heart of an EMS is the concept of continual improvement of environmental performance with resulting increases in operational efficiency, financial savings and reduction in environmental, health and safety risks. An effective EMS would need to include the following elements:

- ◆ A stated environmental policy which sets the desired level of environmental performance;
- ◆ An environmental legal register;
- ◆ An institutional structure which sets out the responsibility, authority, lines of communication and resources needed to implement the EMS;
- ◆ Identification of environmental, safety and health training needs;
- ◆ An environmental program(s) stipulating environmental objectives and targets to be met, and work instructions and controls to be applied in order to achieve compliance with the environmental policy;
- ◆ Periodic (internal and external) audits and reviews of environmental performance and the effectiveness of the EMS; and
- ◆ The EMP.

## 11 CONCLUSION

The proposed CUMET facility will have a positive impact on the economy of Lüderitz and Namibia as a whole. Employment will be provided to the local workforce and training and skills transfer will take place. Various business will be supported along the different transport routes and the Port of Lüderitz will render port services. Overall investor confidence in Namibia will be promoted. The facility will further create an important hub to ensure the reliable transport of manganese ore from South Africa via Namibia.

Manganese ore per se is not a regulated product in Namibia and is not considered to be a hazardous substance. However, any dust that may be present in air in a substantial amount is considered a “hazardous condition”. Since manganese ore has the potential to create significant dust during its transport and handling, it must therefore be handled appropriately. Therefore, dust being one of the main impacts of the project, the Proponent should aim for operations with zero or negligible dust generation. Other potential impacts of significance include noise, health and safety, traffic and the possibility of environmental contamination, specifically the ocean.

Noise pollution should at all times meet the prescribed WHO requirements to prevent hearing loss and minimise nuisance. Health and safety regulations should be adhered to in accordance with the Labour Act and relevant laws and internationally accepted standards of operation. Fire prevention should be

adequate and any waste produced must be removed from site and disposed of at an appropriate facility or re-used or recycled where possible. Hazardous waste must be disposed of at an approved hazardous waste disposal site. Traffic should be regulated to prevent traffic impacts at the entrance to and in the port. All operational areas (outside the warehouse) must be kept clean from ore and its dust to prevent possible surface water contamination and air quality impacts.

The EMP (Section 10) should be used as an on-site reference document for the construction and operations of the facility. Parties responsible for transgressing of the EMP should be held responsible for any rehabilitation that may need to be undertaken. The Proponent should use their management systems in conjunction with the EMP. All operational personnel must be taught the contents of these documents.

**Table 11-1. Impact summary class values prior to mitigation**

Impact Category	Impact Type	Construction		Operations	
	<i>Positive Rating Scale: Maximum Value</i>	5		5	
	<i>Negative Rating Scale: Maximum Value</i>		-5		-5
EO	Contribution to the National Economy	4			5
EO	Employment, Remuneration and Spending Power	3			4
EO/SC	Skills, Technology and Development	3			3
EO/SC	Ideals and Aspirations for the Future	2			2
SC	Demographic Profile and Community Health		-1		-2
SC/EO	Traffic		-1		-3
SC/EO	Employee Health and Safety		-2		-4
SC/EO/PC/BE	Air Quality and Related Impacts		-3		-3
EO	Site Security		-2		-3
PC/EO	Fire		-1		-1
PC	Noise		-1		-4
PC	Waste Production		-2		-2
BE	Ecosystem and Biodiversity Impact - Terrestrial				-3
BE/EO	Ecosystem and Biodiversity Impact - Marine				-3
PC	Groundwater, Surface Water and Soil Contamination		-2		-3
EO	Impacts on Utilities, Infrastructure		-3		-3
SC/EO	Visual Impact		-2		-3
SC/EO	Sense of Place		-2		-4
SC/EO/PC/BE	Cumulative Impact		-2		-3

BE = Biological/Ecological    EO = Economical/Operational    PC = Physical/Chemical    SC = Sociological/Cultural

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## **Appendix A: Proof of Public Consultation**





**Notified IAPs**

<b>Name</b>	<b>Organisation</b>
Anja Kreiner	Ministry of Fisheries and Marine Resources
Aune Nantinda	Hangana Abalone
Benetus Nangombe	Ministry of Health and Social Services
Crispin Clay	Lüderitzbucht Foundation
Elzevir Gelderbloem	Namport
Erich Maletzky	Ministry of Fisheries and Marine Resources
Ferdie de Villiers	Novaship / Port Users Association
Foibe Ngoongoloka	Ministry of Fisheries & Marine Resources
Gebhard Shiindi	Puma Energy Namibia
Gerd Kessler	Five Roses Aquaculture / Southern Breeze Mariculture / Lagoon Aquaculture
Gerhard Kuhrau	Novanam
Graça D'Almeida	Ministry of Fisheries and Marine Resources
Helmut Plietz	A Plietz Engineering Works
Howard Head	Ghost Town Tours
Ingrid Wiesel	Brown Hyena Research Project
Innocent Sinvula	Sturrock Grindrod
Jan Albertus Scholtz	//Karas Regional Council - !NAMI #NUS Constituency
Jason Burgess	Oceangrown / Lüderitz Mariculture
Jean-Paul Roux	Ministry of Fisheries and Marine Resources
Jessica Kemper	Independent Environmental Scientist
Johann Coetzer	Debmarine
Johannes Blaauw	Roads Authority
Johannes Hamukwaya	Ministry of Fisheries and Marine Resources
Jürgen Fleidl	Five Roses Aquaculture
Kolette Grobler	Ministry of Fisheries and Marine Resources
La-Toya Shivute	Ministry of Fisheries and Marine Resources
Lewis Druker	Coastways Tours Lüderitz
Marion Schelkle	Lüderitz Safaris & Tours
Max Kooper	Namport
Mbahupu Tjivikua	Walvis Bay Corridor Group
Michael Mackenzie	Marco Fishing
Moses Maurihungirire	MFMR Windhoek
Nazima Khoa Khoa	Lüderitz Town Council
Phinehas Auene	Directorate of Maritime Affairs, Ministry of Works, Transport and Communication
Pieter Kruger	Pektranam Logistics
Rassie Erasmus	Benguella Wealth Farming
Reginald Hercules	Community Member
Reinhardt Ochs	Lüderitz Town Council
Rodney Braby	Marine Spatial Management and Governance Project - MARISMA
Rudi Cloete	Ministry of Fisheries and Marine Resources

<b>Name</b>	<b>Organisation</b>
Simeon Negumbo	MME
Steve Kantjjuanjo	Ministry of Industrialization, Trade and SME Development
Temba Apulile	Access World / Rosh Pinah Zinc
Thomas Shipepe	Lüderitz Town Council
Ulf Grünewald	Lüderitz Nest Hotel
Victor Libuku	Ministry of Fisheries and Marine Resources
Wayne Handley	Ministry of Environment & Tourism
Wilbard Nashandi	Ministry of Industrialization, Trade and SME Development - Namibia Investment Centre
Executive Director	Ministry of Fisheries and Marine Resources
Executive Director	Ministry of Works, Transport and Communication
	Ministry of Finance (Customs and Excise, Lüderitz Office)
	//Karas Regional Council
	Skorpion Zinc / Vendanta
	Lüderitz Waterfront Development
	Coleman Transport
	Logistics Support Services
	Tradeport
	Marco Fishing
	Seaflower
	Skeleton Coast Trawling

### Registered IAPs


<b>Name</b>	<b>Organisation</b>
Aina Petrus	Private
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Alexey Zavitaev	Namport
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Boy Thomas Shipanga	Hallenberg Logistics Solutions
Brigit Fredrinks	Namfi
Calvin Mwiya	Private
Cecil Kamupingene	Namport
Chris Brown	Namibian Chamber of Environment
Crispin Clay	Lüderitzbucht Foundation
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Estelle Fleidl	Private
Ferdie de Villiers	Novaship Namibia
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Helmut Plietz	A Plietz Engineering Works
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Ulf Grünewald	Lüderitz Nest Hotel
Valmary Jantje	Eshisha Development Organisation
Vilho Mtuleni	EnviroLeap Consulting
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<b>To:</b> The Executive Director Ministry of Works and Transport Private Bag 13341 Windhoek	<div style="border: 1px solid black; padding: 5px; display: inline-block;">         2021-11-05          11 October 2021       </div>	<b>11 October 2021</b>
<b>Re:</b> <u>Environmental Assessment and Environmental Management Plan for the Storage and Handling of Manganese Ore in the Port of Lüderitz</u>		
<p>Dear Sir/Madam</p> <p>In terms of the Environmental Management Act (No 7 of 2007) (EMA) and the Environmental Impact Assessment Regulations (Government Notice No 30 of 2012), notice is hereby given to all potential interested and/or affected parties (IAPs) that an application will be made to the Environmental Commissioner for an environmental clearance certificate (ECC) for the following project:</p> <p><b>Project:</b> Environmental Assessment and Environmental Management Plan for the Storage and Handling of Manganese Ore in the Port of Lüderitz</p> <p><b>Proponent:</b> Lüderitz Bay Shipping &amp; Forwarding (Pty) Ltd</p> <p><b>Environmental Assessment Practitioner:</b> Geo Pollution Technologies (Pty) Ltd</p> <p>Lüderitz Bay Shipping &amp; Forwarding (Pty) Ltd (the Proponent) was awarded the bid to develop and operate a common user manganese export terminal (CUMET) in the Port of Lüderitz. The terminal will receive manganese ore from mines located in the Northern Cape of South Africa and will be responsible for the temporary stockpiling and subsequent loading of the ore onto vessels berthed in the Port of Lüderitz. The Proponent initiated an environmental impact assessment (EIA) process with the aim of obtaining an ECC for the proposed CUMET project. The scope of the EIA include all port bound activities from the point of entry into the port and inclusive of the loading of barges berthed in the port.</p> <p>For the project, a warehouse will be constructed in the Port of Lüderitz. The warehouse will be fully enclosed and cover 12,000 m<sup>2</sup>. Conveyors, also fully enclosed, will be installed towards the quay side and will be used for ship loading purposes. Dust suppression systems and all necessary utilities and support infrastructure will be installed. Construction activities will involve some earthworks, concrete casting and building / assembly of the warehouse and conveyor systems</p> <p>Manganese ore will be received by third parties via road and rail from the Northern Cape. The ore will be offloaded directly in the warehouse where it will be stockpiled using front-end loaders and excavators. Barges will berth at the nearby quay wall and ore will be loaded directly into the barges' hulls, via the enclosed conveyors. Once a barge is full, it will leave the port and proceed to the transhipment location (not part of the EIA). It is envisioned that 1.4 million metric tonnes of ore can be exported via the CUMET per annum. Dust suppression will be conducted inside the warehouse, while the enclosed conveyor and dust suppression on the barge itself, will prevent dust from escaping during loading. Administrative tasks, site security and cleaning of the premises will continue on a daily basis to ensure the effective and clean operations of the facility. Environmental compliance monitoring and public liaison will continue throughout operations</p> <p>Geo Pollution Technologies (Pty) Ltd was requested to conduct an environmental assessment for the proposed project. The assessment is required in terms of the EMA and will be conducted according to the EMA regulations as published in 2012. As part of the assessment we consult with IAPs who are invited to register with the environmental consultant to receive further documentation and communication regarding the project. By registering, IAPs will be provided with an opportunity to</p>		
Directors:	Page 1 of 2 P. Botha (B.Sc. Hon. Hydrogeology) (Managing)	

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Registration details and comments should reach Geo Pollution Technologies by 12 November 2021.

To register, please contact: Email: [cumet@thenamib.com](mailto:cumet@thenamib.com) Fax: 088-62-6368

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  
Environmental Scientist



## Lüderitz Town Council



TEL.: (+264-61) 257411 ♦ FAX.: (+264) 88626368

LÜDERITZ CENTRAL (220082)

PO BOX 11075 ♦ WINDHOEK ♦ NAMIBIA

E-MAIL: gpt@thenamib.com

To: The Executive Director  
Ministry of Works and Transport  
Private Bag 13341  
Windhoek

11 October 2021

Re: Environmental Assessment and Environmental Management Plan for the Storage and Handling of Manganese Ore in the Port of Lüderitz

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Directors:

Page 1 of 2  
P. Botha (B.Sc., Hons. Hydrogeology) (Managing)

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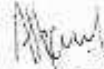
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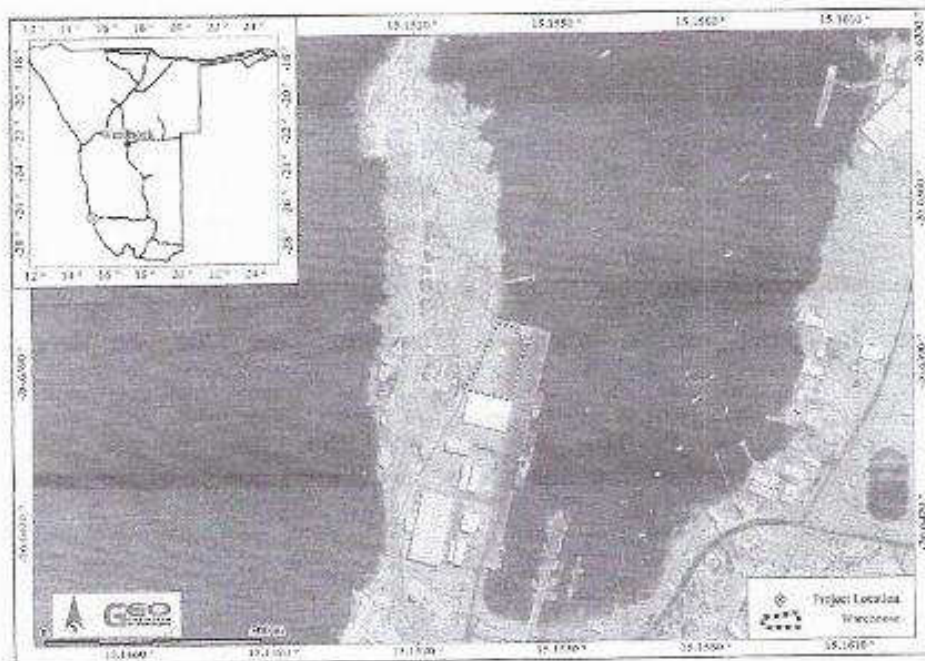
Thank you in advance.

Sincerely,

**Geo Pollution Technologies**



**Andra Faul**  
Environmental Scientist





## Ministry of Fisheries and Marine Resources



TEL: (+264-61) 257411 • FAX: (+264) 88626368

CELL: (+264-81) 1220982

PO Box 11073 • WINDHOEK • NAMIBIA

E-Mail: gpt@thenamib.com

To: The Executive Director  
Ministry of Fisheries and Marine Resources  
Private Bag 13355  
Windhoek



Re: Environmental Assessment and Environmental Management Plan for the Storage and Handling of Manganese Ore in the Port of Lüderitz

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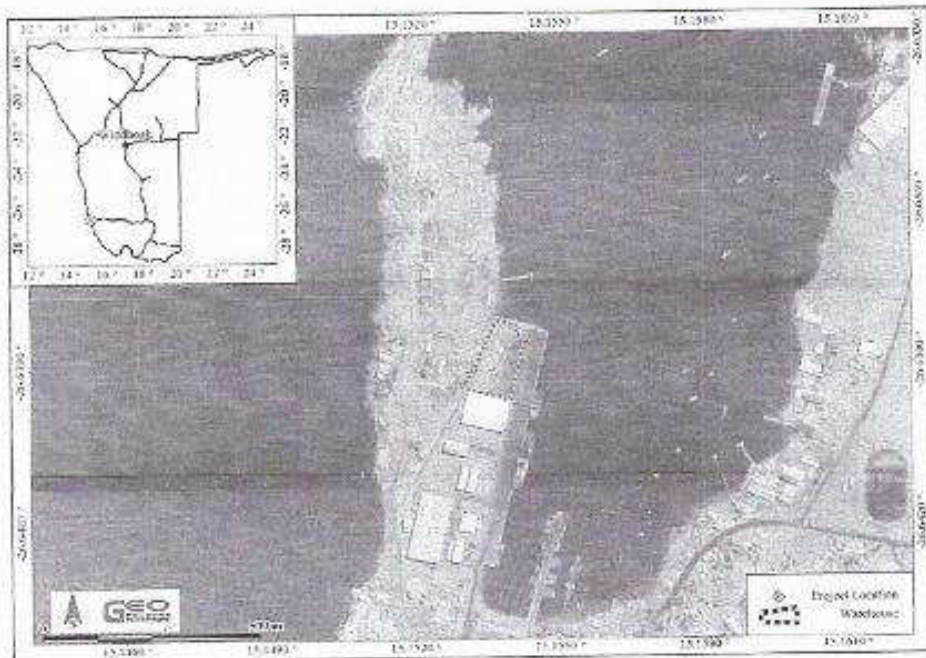
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Should you require any additional information please contact Geo Pollution Technologies at telephone 067-257411.

Thank you in advance.

Sincerely,  
**Geo Pollution Technologies**



André Paul  
Environmental Scientist



Ministry of Works and Transport



TEL: (+264-61) 257411 • FAX: (+264) 88626368

CELL: (+264-81) 1220082

PO BOX 11073 • WINDHOEK • NAMIBIA

E-MAIL: [info@geopollution.com](mailto:info@geopollution.com)

AND TRANSPORT

To: The Executive Director  
Ministry of Works and Transport  
Private Bag 13341  
Windhoek

11 October 2021

2021-10-15

E. Steiner

Re: Environmental Assessment and Environmental Management Plan for the Storage and Handling of Manganese Ore in the Port of Lüderitz

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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  
Environmental Scientist





• CALLS FOR ACCOUNTABILITY AND TRANSPARENCY

# Nanso denounces NSFAP's ministry return

The student union said it would be more prudent to "fix the governance predicaments" at the NSFAP and "work towards ensuring that it becomes efficient and effective".

ESTER KAMATI WINDHOEK

The Namibian National Students Organisation (Nanso) has denounced the planned return of the Namibia Students Financial Assistance Fund (NSFAF) as a department in the higher education ministry.

The organisation's acting national spokesperson Esther Shakela said Nanso had been part of consultations held in 2018 regarding the dissolution of the fund and made its submissions along with other stakeholders, which have not been reflected in the final decision in the matter.

Nanso has further asked for the conclusions of deliberations in the matter to be made public, calling for "accountability, transparency and clarity on what informed this decision".

"These findings must be publicised," it said.

"The organisation does not in any way at all support the

decision to have NSFAP return to the ministry as a directorate. It would be more prudent to fix the governance predicaments at the institution and work towards ensuring that it becomes efficient and effective."

Talks to incorporate the fund into the ministry date back to 2017, when consultations were held with stakeholders on the matter pending a Cabinet decision.

The Namibians last month reported that the fund received a formal notification of Cabinet's decision in this regard in March.

**Limkokwing University**  
Nanso further expressed its disapproval at establishing a Limkokwing University campus in Namibia, stating that the Malaysian institution would gnaw further into state funds.

"While there is yet to be factual details concerning the matter, Nanso would like to make it categorically clear that it does not support the set-up of this university, especially because it is supposedly going to be reliant on already scarce government funding," Shakela added that there



**STEADFAST:** Student leaders Luciano Kamala, Esther Shakela and Ester Shitana have discouraged the merger of NSFAP as a directorate in the higher education ministry. PHOTO: ESTER KAMATI

are numerous institutions in the country that require government's assistance.

"Government funding must prioritise those institutions and they should be given the necessary support in order to develop them into class institutions. Resources must be ploughed back into the economy."

Nanso also stated that foreign institutions have a tendency of coming to Namibia and seeking government funding "and then proceed to offer courses already available in the country, which results in an influx of graduates into the labour market who have all done similar courses".

"We find this redundant and encourage government efforts to be geared into the direction of Namibian institutions."

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"We find this redundant and encourage government efforts to be geared into the direction of Namibian institutions."

## NORTHERN SPAR EMPLOYEES BEMOAN MISTREATMENT

TUTUMBO HANDEKA OSHAKATI

Employees of Spar Oshakati, Ongwediva and Ondangwa in the Oshana Region are seeking the intervention of the labour commissioner to look into unfair working conditions and insults they claim they are subjected to by their employer.

Last Thursday, the employees held a peaceful demonstration and handed over a petition to Ivette Mouton, the assistant manager at Oshakati.

Elma Shafodino, who read the petition on behalf of her colleagues, said they are not happy with the way they are treated as they feel exploited.

The employees also said they are fired without due processes and their managers do not respect the Namibian labour law. Shafodino said they are demanding management to dismiss the manager at Oshakati Spar.

Some of the grievances listed in the petition include late working hours without overtime payment.



**WE DESERVE BETTER:** The employees of Spar Oshakati, Ongwediva and Ondangwa held a peaceful demonstration and handed over a petition last Thursday. PHOTO: TUTUMBO HANDEKA

"Workers are forced to pay for items that are mistakenly packed in security's plastics once the security personnel detect it at the door. Workers are forced to buy expired items of food. This unfair labour practice must also come to an end on or before 30 October."

"Intimidation, insulting and abusive language and racism are the order of the day at Spar. Rotation workers [should] be given enough time or informed in advance for rotation and assisted in terms of transport fees and accommodation," she said.

The Revolutionary Union and the The Namibia Food and Allied Workers Union (Nafau) represented the employees.

Mouton said she will pass on the petition and promised to give the employees feedback as soon as possible.

**PUBLIC PARTICIPATION NOTICE**  
ENVIRONMENTAL ASSESSMENT AND MANAGEMENT PLAN FOR THE STORAGE AND HANDLING OF MANGANESE ORE IN THE PORT OF LÜDERITZ

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The environmental assessment will be according to the Environmental Management Act of 2007 and its regulations as published in 2012.

All interested and affected parties (IAPs) are invited to register with the environmental consultant. By registering you are provided with the opportunity to share any concerns, issues or comments related to the project, for consideration in the environmental assessment. A public meeting will be conducted in Lüderitz. The time and venue details will be communicated to registered IAPs. Please register with Geo Pollution Technologies by 22 October 2021 to ensure timely receipt of project and meeting details. All comments should reach us by 05 November 2021.

**André Faust**  
Tel: +264-61-257411  
Fax: +264-88626368  
E-Mail: [andrea@shamath.com](mailto:andrea@shamath.com)

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Be Different. Be Smart.

• MORE PERSONS POSSIBLY INVOLVED

# New twist in Wasserfall murder trial

The prosecution has indicated that more suspects may be added to the Shannon Wasserfall murder docket.

LEANDRA LOUW  
WALVIS BAY

New information has come to light of the involvement of other possible suspects in the murder of Shannon Wasserfall. This emerged after Azaan Madisia and her brother, Steven Mulundu, made another appearance before the



IN THE DOCK: Azaan Madisia (back) and Steven Mulundu are accused of murdering Shannon Wasserfall. PHOTO: LEANDRA LOUW

Walvis Bay magistrate's court. Appearing before Magistrate Vicky Nicolaidis, the accused said they had applied for legal aid and were ready to plead. Public prosecutor Maggy Shiyagaya said the State was not ready to proceed. "New information has come to light regarding possible outstanding suspects. We will hopefully get confirmation thereof by mid-November." Magistrate Nicolaidis postponed the matter to 8 November. Dennis Wasserfall, uncle of the late Shannon, stated in a Facebook post, "at the location Kandari was brutally murdered, unknown DNA was recently discovered, which raises

the question, who else was involved?" Dennis said it had been a year and four days since Azaan Madisia confessed to the murder. "Slowly, as the story progresses, it seems that she keeps purposely leaving important details out. As a family, all we have wanted since 10 April 2020 is answers." He accused Azaan of lying and manipulating proceedings since the beginning of the case. "There were times none of us as a family had hope and all we could do was rely on our faith. All we want is truthful answers from the perpetrators. They've taken our daughter away from us; the least they can do is tell us who the third person is. There

will not be peace until we have our answers. There will not be silence." Madisia was the number one suspect implicated in the disappearance of Shannon Wasserfall (22), who went missing on 10 April 2020 from Kunsebmond. Months later, on 6 October 2020, her remains were found in a shallow grave in Walvis Bay after the police had received a tip-off. Mulundu was arrested in November 2020 after he surrendered himself to the police, confessing that he had helped Madisia to dispose of Shannon's body. Both accused have been in custody since last year.

## Serious hunger problem in Namibia

ELIANE SMIT  
WINDHOEK

Namibia has a serious hunger problem, a global report tracking the state of hunger worldwide has found. In the 2021 Global Hunger Index, Namibia ranks 80th out of 118 countries. The report, prepared by Welthungerhilfe and Concern Worldwide, says Namibia is among the 37 countries with a serious hunger problem. The index scores countries on a 100-point 'severity

scale', where zero is the best score (no hunger) and 100 is the worst. With a score of 20.2, Namibia suffers from a level of hunger that is "serious", according to the report. Namibia's score has worsened since last year when it ranked 70th among 107 nations on the index and was categorised as having a moderate hunger problem. At that stage the country scored 19.1 on the index. However, Namibia has managed to improve its score since 2010 when it stood at 30.9. In 2005 the country scored

26.4 and in 2000 Namibia's score was 25.5. A total of 427 905 Namibians, or 20% of the population, experienced acute or severe food shortages last year. The index ranks countries based on four key indicators: undernourishment, child mortality, child wasting and child stunting. According to the report, the proportion of undernourished people in Namibia stands at 19.8%. This has decreased from 29.6 since 2010. The prevalence of wasting in children under the age of five years has slightly decreased

from 7.1% in 2010 to 6.7%. The prevalence of stunting in children under five has also decreased slightly, from 22.7 in 2010 to 17.7% this year. The under-five mortality rate has decreased from 5.2% in 2012 to 4.2% in 2019. The report considers 156 million people considered acutely food insecure. Current projections based on the Global Hunger Index (GHI) show that the world as a whole – and 47 countries in particular – will fail to achieve even low hunger by 2030. Somalia has the highest level of hunger according to the 2021 GHI ranking – its GHI score of 50.8 is considered extremely alarming. It is preceded by five

countries with levels of hunger that are alarming – Central African Republic, Chad, Democratic Republic of Congo, Madagascar, and Yemen – and 31 countries that have serious levels of hunger. The report says that conflict, climate change, and the Covid-19 pandemic – three of the most powerful and toxic forces driving hunger – threaten to wipe out any progress that has been made against hunger in recent years. According to the report the consequences of climate change are becoming ever more apparent and costly, but the world has developed no fully effective mechanism to mitigate, much less reverse, it.

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**EIF REACCREDITED BY GREEN CLIMATE FUND**  
MORE FUNDING: The Green Climate Fund Board meeting where it decided to re-accredit Namibia's Environmental Investment Fund. PHOTO: CONTRASTS

**PUBLIC PARTICIPATION NOTICE ENVIRONMENTAL ASSESSMENT AND MANAGEMENT PLAN FOR THE STORAGE AND HANDLING OF MANGANESE ORE IN THE PORT OF LÜDERITZ**

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**André Foul**  
Tel: +264-61-237411  
Fax: +264-48626368  
E-Mail: [andrefoul@thenamib.com](mailto:andrefoul@thenamib.com)

**GEO** Pollution Technologies

ELIANE SMIT  
WINDHOEK

The Environmental Investment Fund (EIF) has been re-accredited by the Green Climate Fund (GCF) for a further five-year period. The initial five-year accreditation lapsed in June this year. According to the EIF, the re-accreditation was preceded by a rigorous institutional review of the Fund by the GCF. The EIF was first accredited in 2016 as a Direct Access Entity for country-level programme delivery. To date, it has raised more than N\$640 million for climate action grants and readiness support from the GCF. According to the Fund, the GCF reaffirmed its commitment to funding that will help developing countries reach their climate ambi-

bitious under the Paris Agreement at its 30th board meeting held last week. The EIF said it was hopeful that this re-accreditation would bring new funding opportunities for various projects in line with Namibia's development objectives. The GCF climate-change resources accessed by the Fund so far included: Climate-resilient agriculture in three of the northern crop-growing regions; creating climate-change resilient livelihoods through community-based natural resources management; improving rangeland and ecosystem management by smallholder farmers in the Sesfontein, Fransfontein and Warmquell areas; and building the resilience of communities through an ecosystem-based adaptation approach. [eliane.smit@thenamib.com](mailto:eliane.smit@thenamib.com)

Press Notice: Die Republiek 11 and 18 October 2021

Maandag 11 Oktober 2021

Republiek

NUUS 3



Pro-keuse-protesoptogte in Namibië het die aborsiesedebat weer in 2020 laat vlam vat. FOTO: AASHI



# Gesprekke oor aborsie kom, sê parlement

» Openbare sessies landswyd beplan

Drie klagskrifte oor aborsie is na die parlement se staande komitee oor geslag en gesin-sake verwys.

Jana-Mari Smith

Namibiëers sien gunste van reprodusie- en geslagsekerheid toe die hervorming van die aborsiewet, en diegene wat 'n stryd voer om die huidige aborsiewet te behou, sal die kans gegaan word om hul mening voor parlementsdele te lug.

Mar. David Nahongandja, die parlementêre woordvoerder, het verlede week gesê die datum van die open-

bare gespreksessies oor aborsie moet nog bepaal word.

Die beplande sessies spruit uit die herlewing van die pro-keuse-beweging in die middel van 2020, toe groot protesoptogte in Namibië plaasgevind het en meer as 62 000 pro-keuse-Namibiëers 'n klagskrif teen gunste van die wettiging van aborsie onderleek het.

Die hervatting van die aborsiesedebat het 'n oproeping veroorsaak onder diegene wat gekant is teen die hervorming van die Wet op Aborsie en Sterilisasie 2 van 1975, wat uit die apartheidsera dateer.

'n Klagskrif getiteld "Pro-life" is meer as 15 000 keer onderteken.

Nahongandja het gesê die parlement het verlede jaar ook 'n derde klagskrif ontvang – onderteken deur lede van die Omsake-kommissie van kerke.

Die drie klagskrifte is na die parlement se staande komitee oor geslag en gesin-sake verwys. Die komitee het op 20 September vanjaar besluit om eers die twee groter openbare klagskrifte te oorweeg.

"Wanneer die repesente verbonde aan die klagskrif, het die komitee ook ingestem om gesamentlike openbare gespreksessies saam met die komitee oor grondwetlike en regsake aan te bied," het hy gesê.

Die sessies sal in Windhoek en in die streke gehou word.

Hy het gesê die komitee sal op 'n datum en vergaderplekke besluit

wanneer hulle weer byeenkom.

AGTERGROND

Die Namibiëse aborsiewet is in 1996 in Suid-Afrika geskrap, wat plek gemaak het vir wettige toegang tot veilige aborsies in die buurland.

Euse Namibiëers wat dit kan bekostig, reis na Suid-Afrika om veilige aborsies te kry.

Bege- en menseregte-aktiviste het daarop gewys dat selfs in gevalle waar aborsie in Namibië toegelaat word – soos bloedsande, verkragting en in mediese noodgevalle – is dit 'n moeilike proses.

Die Reprodusieentrum (LAC) het die huidige stappe uiteengesit.

Twee mediese praktisiërs moet 'n sertifikaat verskaf wat die gronde vir aborsie bevestig. Waar die gronde

vir die aborsie onwettige sekoueise omgang (verkragting of bloedsande) is, moet 'n landdros 'n sertifikaat uitreik.

In enige ander omstandighede is aborsie 'n strafregtelike oortreding vir beide die vrou wat die aborsie wil hê en die persoon wat dit uitvoer. Die straf is 'n boete van tot N\$5 000 of gevangenisstraf van tot vyf jaar, of albei.

"Die kriminalisering van aborsie het baie Namibiëse vroue tot onveilige aborsies gedryf. Die bydrae wat onveilige aborsies in sterftes onder moeders lewer, is nie bekend nie, maar die beskikbare data dui daarop dat dit vir 12% tot 16% van die jaarlikse sterftes onder moeders verantwoordelik is," het die LAC verlede jaar geskryf.

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## Staatshuis verwelkom Chanique

Namibië se Mej. Supranasionaal, Chanique (Chani) Rabe, is onlangs uitgenooi om met president Hage Geingob by Staatshuis te vergader.

Rabe is vergesel deur lede van die Mej. Supranasionaal-organisasie en het die geleentheid gebruik om die jeugprojekte te verduidelik waaraan hulle werk.

"Ek is baie passievol oor die werk wat ek doen om terug in my land te ploeg. Dit is nie net my plig nie, maar my voering om van my vaardighede te deel om die jongmense van die land waarvoor ek so lief is, te bemagtig en op te hef," het sy aan Geingob verduidelik.

Die president het sy dank uitgespreek oor die manier waarop Rabe haar land as die eerste Mej. Supranasionaal van



Mr. Willem Fourie, die nasionale direkteur van Mej. Supranasionaal Namibië, Chanique Rabe, mnr. Andre Sleigh, die kreatiewe direkteur van die Mej. Supranasionaal-organisasie (agter) en president Hage Geingob. FOTO: FRANCOIS LOTTENS/INFORMASIE WEERD

Afrika verteenwoordig.

"Ek het jou reis gevolg en ek is so trots op jou. Gewoonlik stel ek ambassadeurs aan vir spesifieke werk, maar jy is ook 'n spesiale ambassadeur van Namibië," het Geingob gesê.

Hy het 'n diplomatieke paspoort aan haar oorhandig "so dat jy jou pligte kan maak en 'n helder lig op ons land en sy ongelooflike mense kan laat sien".

Tydens die laaste runde van die Mej. Supranasionaal-skeunheids-kompetisie in Pole, is Rabe gevra wat sy in 30 minute met die leier van haar land sal wil bespreek.

Rabe het gesê sy respekteer die manier waarop die president met die mense van Namibië kommunikeer en dat sy Geingob se raad sal vra oor hoe sy haar stem en klade op haar pod vorentoe kan gebruik om 'n verskil te maak.

"Dit is belangrik dat jy 'n outentieke persoon bly en sityd onthou die wêreld sal jou waar hart sien as jy jou werk met liefde en passie doen. Ek glo in jou en weet jy sal amboe om ons almal baie trots te maak," het Geingob gesê.

Die president van die Mej. Supranasionaal-organisasie, mnr. Gerbrand Furziska von Lepinski, het die president vir sy ondersteuning bedank.

"Ons het 'n pragtige, opregte en vriendelike ambassadeur vir ons organisasie en a land gevind. Daar die jaar sal ons 'n pragtige land soveel as moontlik bevorder," het hy gesê.

"Ons het 'n paar beloftes aan die gemeenskap in die Zambesestreek gemaak en ons kan nie wag om vroeg volgende jaar terug te keer om dié beloftes aan die Sijwa-projek na te lew nie. Dit gaan baie spesiaal en opwindend wees," het die kreatiewe direkteur van die organisasie, mnr. Andre Sleigh, bygevoeg.

Die volgende bestemming op Rabe se nasionale toekoms- en promofie-toer is Swakopmund en Walvisbaai.

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**PUBLIC PARTICIPATION NOTICE**  
**ENVIRONMENTAL ASSESSMENT AND MANAGEMENT PLAN FOR FIBRE STORAGE AND HANDLING OF MANGANESE ORE IN THE PORT OF LÜDERITZ**

Geo Pollution Technologies (Pty) Ltd was appointed by Lüderitz Bay Shipping & Forwarding (Pty) Ltd to undertake an environmental assessment for the development and operations of a common ore manganese export terminal (CUMET) in the Port of Lüderitz. The terminal will receive manganese ore from mines located in the Northern Cape of South Africa. Ore will be temporarily stockpiled and subsequently loaded via closed conveyor system onto vessels berthed in the Port of Lüderitz. More information regarding the project is available at: <http://www.themanzib.com/projects/projects.html>

The environmental assessment will be according to the Environmental Management Act of 2007 and its regulations as published in 2012.

All interested and affected parties (IAPs) are invited to register with the environmental consultant. By registering you are provided with the opportunity to share any comments, issues or concerns related to the project, for consideration in the environmental assessment. A public meeting will be conducted in Lüderitz. The time and venue details will be communicated to registered IAPs. Please register with Geo Pollution Technologies by 22 October 2021 to ensure timely receipt of project and meeting details. All comments should reach us by 05 November 2021.

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# Pensioenaris tydens inbraak vermoor

Die polisie het die publiek se hulp versoek om die geëete verdagtes wat trek in verband met 'n moord en 'n saak van 'n huisbraak met die doel om te roof.

Die polisie se bevelvoerder van gemeenskapsake in die Erongvlei-distrik, insp. Hani Shapumba, het bevestig dat mnr. Lagfer Auel, 'n 80-jarige Namibiese man, Vrydag dood in sy huis in First Avenue in Vintea, Swakopmund, aangetref is.

"Twee vriende van die oorlede het ná verskeie pogings om hulle in kontak na sy huis gegaan en het die lyk onttrekke 1600 in die slaapkamer ontdek." Volgens Shapumba is die liggaam van die oorlede op die vloer langs sy bed gevind. "Sy hande en voete was met skoonverre vagebond in 'n kledingstuk in 'n mond gestop. Die oorlede het alleen getoë. Tydens die voorlopige ondersoek het die polisie

twee stalle voortgare in die afd. opgemerk. 'n Venster is ook gebreek; die verdagtes het vermoedelik skandale toegang tot die huis verkry," het hy gesê. 'n Rooi Chevrolet Spark met die registrasienommer N 3795 S, 'n klein maarskappies, 'n Samsung-plaatkerm-TV en 'n Samsung-kamera is gesteel.

Die voortuig is Saterdag verlate in die in-formele nedersetting DBC, gevind. "Die verdagtes is in dié stadion onbekend. Die oorlede se lyk is of die staatsbespitas op Swakopmund gemaak," het Shapumba gesê.

Hy het 'n beroep gedoen op almal wat moontlik ooggetuies van die voorval was of inligting het oor die verdagtes en waar hulle hul tans bevind, om dringend kontak te maak met adj. komm. Sison by 061 2464757; hoofinspekteur Mwaung by 061 2464757; inspekteur Tjibbera by 061 432 7105, of die naaste polisie-kantoor.

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FOTO: ARJUN BA LUKHASE

# » Persoonlike mediese outonomie nie 'n absolute reg Entstofmandate word deur verskeie wette ondersteun

Die Namibiese regering oorweeg tans nie enige wetgewing wat inenting verpligtend maak nie.

Henriette Lamprocht

Die belangrikste grondwettelike regte wat moontlik ingeperk kan word deur 'n entstofmandat vir werknemers, is die reg op persoonlike vryheid, die reg op menswaardigheid en die reg om enige beroep te beoefen of handel of besigheid te bedryf.

In die grondwet versprei artikels 7, 8 en 21 (1)(j) onderskeidelik na dié regte. "Die belangrikste vraag is of die inmenging met dié regte deur 'n entstofmandat, opgelei deur individuele werknemers om die gesondheid van hul werknemers en ander persone te beskerm, 'n redelike en geregtedige inmenging met hierdie regte is," so die Reghulp-sentrum (LAC) in 'n ondersoek na die Namibiese regsagtergrond tot entstofmandate, insluitend onlangse regsverwikkings in die res van die wêreld.

Die Namibiese regering oorweeg tans nie enige wetgewing wat inenting verpligtend maak nie. Dit huidige standpunt dat die risiko om Covid-19 op te doen, swaarder weeg as die risiko om ingeënt te word en dat entstowwe wat in die land gebruik word, hoofsaaklik veilig en doeltreffend, met ernstige neuseffekte wat baie raar is.

Volgens die LAC vestig Namibiese regspraak 'n reg tot persoonlike mediese outonomie, maar nie as 'n absolute reg nie. "Die regspraak dui ook aan dat regsbeperkings in die werksomgewing regverdigbaar kan wees waar dit redelik met openbare gesondheid en veiligheid verband hou."



FOTO: ARJUN BA LUKHASE

ARBEIDSWET

Namibië se arbeidswet voorsien ook gesag aan werkgewers om entstofmandate op te lê en onderhandel die argument dat werkgewers 'n verpligting het om werkers en lede van die algemene publiek te beskerm wat in kontak met die werksomgewing kom.

Met verwysing na die wet op openbare en omgewingsgesondheid of die LAC dié by die regering - om voldoende gesag vir nasionale regulasies vir entstofmandate te verskaf - soo verkies om in die toekoms dié roete te volg.

Daar is geen spesifieke regsverwikkings met betrekking tot entstofvervaltes wat opgelei word vir ander persone of geleentehede nie, maar dié reg tot vryheid van assosiasie en die verpligting om te beskerm teen sêdeling teen ander, sal volgens die LAC voldoende gesag in dié gevalle wees.

In dié verband gebruik die sentrum die voorbeeld van 'n persoon wat messe rondwaai of 'n persoon wat duidelik droek en buite beheer is en wettiglik by 'n geleentheid weggevoer word of verhoed word om die perseel te betree om die veiligheid van ander te beskerm.

Die sentrum verwys ook na bepalinge in die wet vir korrupsiewe diens wat die mediese beampte of korrupsiewe instelling die mag gegee om 'n gevangene sonder sy toestemming teën sêdeling te betree.

Die verdedigingswet se bepaling vir verpligte immunisering is ook daar kan van enige lid van die werkgroep of enige onderstutende diens, mediese dienste of reiserisico weerswoordig word om "van tyd tot tyd deur 'n voorgeskrewe owerheid teen 'n oordraagbare, aansteeklike of epidemiese siekte" ingeënt te word.

INTERNASIONAAL

Dié haal ook 'n amptelike verslag van die Internasionale Arbeidsorganisasie (ILO) aan wat fokus op werknemers verplig kan word om toegang tot die werkgroep te kry.

Volgens dié verslag spreek internasionale arbeidsstandaarde nie direk die kwessie van verpligte inentings as 'n werkvoorwaarde aan nie, met die regbasis vir sulke maatreëls wat van nasionale regsraamwerke sou afhang.

Die ILO sluit egter nie die moontlikheid uit dat inenting in sommige gevalle nodig is nie. "Sosiale dialoog en konsultasies blyk die beste manier te wees om vas te stel of inenting, gebaseer op objektiewe kriteria, inderdaad vereis mag word vir persoonlike veiligheid."

Die organisasie beklemtoon, soos inenting deur 'n werkgroep verrig word, dié op 'n nie-diskriminerende manier, met gepaste uitsonderings en aanpassings implementeer moet word.

Die vereiste inenting moet ook gratis vir werknemers wees. 'n Entstofmandat sal by 'n werkgroep in-

gestel word, moet dit volgens die LAC onder meer ontvreklik word ná konsultasie met die geraakte werknemers.

Oorweging moet geskenk word aan alternatiewe vir werknemers wat hulself nie wil laat inent nie (gevoelde toetsing en maskers), inligting oor die entstofsituasie moet aan lede van die publiek gegee word wat moontlik in kontak met dié werknemers mag kom en laastens dat bona fide godsdienslike besware en mediese uitsonderings in ag geneem word.

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## NUWE COVID-MAATREÛLS

President Hage Geingob het Vrydag die aandrif op 'n amptelike asiel van die nuwe Covid-19-regulasies geopen. Opleerbare bysterkoms en sportgeleentehede kan deur 200 persone bygewoon word. Regulasies vir alkoholverkope en -verbruik bly rooif, terwyl gimnasiums, nagklubs en casino's met die helfte van hul kapasiteit kan sake doen. Alle Covid-19-gevalle moet binne 10 dae gelaas word.

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**Minutes of the Public Meeting****Minutes of Meeting**

**Re: Public Meeting: Environmental Assessment for the Proposed Common User Manganese Export Terminal, Port of Lüderitz**

**Date: Friday, 05 November 2021**

**Time: 14:30-16:30**

**Venue: Turnhalle, Lüderitz**

**In attendance:**

<b>Name</b>	<b>Organisation</b>
Dr. André Faul	Geo Pollution Technologies (GPT)
Mr. Patrick Kohlstaedt	Manica Group Namibia (Lüderitz Bay Shipping and Forwarding)
Mr. Johannes Isaaks	Namport
Ms. Estelle Fleidl	Private
Mr. Yazeet Mwiya	Private
Mr. Thomas Shipepe	Lüderitz Town Council
Mr. Ulf Grünewald	Nest Hotel
Mr. Max Kooper	Namport
Mr. Calvin Mwiya	Private
Mr. Innocent Sinvula	Sturrock Grindrod
Ms. Aina Petrus	Private
Ms. Brigit Fredricks	Namfi
Mr. Temba Apulile	Access World
Mr. Phillipus Hedimbi	Namport
Ms. R.M. Sinvula	Ministry of Environment, Forestry and Tourism
Ms. Valmary Jantje	Eshisha Development Organisation
Mr. Alexey Zavitaev	Namport
Mr. Helmut Plietz	A Plietz Engineering
Mr. Boy Thomas Shipanga	Hallenberg Logistics Solutions
Mr. Albert April	Debmarine
Mr. Cecil Kamupingene	Namport
Ms. Elretha Mungunda	Ministry of Environment, Forestry and Tourism
Dr. Jessica Kemper	Private
Mr. Richard Kennedy	Namport
Mr. Ferdie de Villiers	Novaship Namibia
Mr. Ignatius Tjipura	Lüderitz Town Council
Dr. Jean Paul Roux	Seacode/NNF

Dr. André Faul welcomed all at the meeting and proceeded with a presentation to introduce the Common User Manganese Export Terminal (CUMET) project to the audience. He explained who the various parties involved with the CUMET project are, what the purpose of the environmental assessment is, and highlighted some of the main project benefits and potential impacts. After the presentation, the floor was opened for questions and comments.

Ms. Estelle Fleidl noted that, although it is not directly part of the current environmental assessment, there are concerns regarding the trucking of manganese ore and road wear and tear, both on the national roads and in town. Dr. Faul noted that road damage is indeed one of the main impacts that can result from the project in its entirety. The responsibility for maintaining roads remains with Roads Authority or the Municipality and that is why levies, example fuel levies, are paid by road users and the trucking industry. The magnitude of the current project can act as a catalyst for maintaining and upgrading of roads due to the amount of money that can be generated through such levies. Mr. Patrick Kohlstaedt agreed that it is the role of government to maintain roads and also noted that the Road Traffic Management System (RTMS) that is envisioned for the trucking of the ore does not increase wear and tear on the road beyond that of standard trucks, because the axle loads will remain the same, and thus the force on the road remain the same. There will however be more trucks on the road.

Dr. Jessica Kemper asked why the rail is not upgraded to accommodate increased ore transport, thus taking traffic off the roads. Dr. Faul noted that it is TransNamib's vision to increase / optimise rail transport. That is also why the warehouse includes a rail offloading option for future use. He further noted that the current limitations of the rail are: a section of rail near Buchholzbrunn [between Buchholzbrunn and Sandverhaar] that has not been upgraded yet; the steep decline into Lüderitz; and TransNamib's shortage of rolling stock. Mr. Kohlstaedt confirmed they will be ready for the rail option should TransNamib, on their own as Parastatal or partnered with a private investor, realise more efficient rail transport.

Mr. Max Kooper mentioned that the road between Keetmanshoop and Ariamsvlei is a concern. They have thus been in discussion with Roads Authority and the Ministry of Works, Transport and Communication. The road between Rietfontein border post and Keetmanshoop is now actively being considered as an alternative road option, and the upgrading of the 42 km between Sandverhaar and Buchholzbrunn is looked into. He noted that a holding station will be commissioned outside of Lüderitz to regulate traffic flow through town in order to minimize traffic impacts.

Ms. Fleidl asked if the Proponent [Lüderitz Bay Shipping and Forwarding] will train local people to fill the jobs envisioned for the project, as this mostly did not realise with past projects. Mr. Kohlstaedt replied that people employed in the warehouse will have to be trained to provide for safe operations and that these positions are not highly skilled positions and there should be local people who can fill them. There will also be spinoffs in terms of truck repair, tyre repair/replacement, etc. He does not foresee that a specific "training school" will be established, but they do intend to establish a fund for community development through education, environmental protection, youth, culture and sport.

Mr. Ferdie de Villiers asked, from a tourism perspective, how noise will be mitigated. With increased volumes there will be more and bigger trucks moving through town, 24 hours a day. He noted that there are guesthouses and residential areas along the route. Ms. Fleidl added that trains will increase noise as well. Dr. Faul noted that noise remains a difficult impact to mitigate. He noted that in terms of the port itself, the conveyor system to be used for ship loading should mitigate noise impacts as compared to skip loading. He confirmed that from a [sense of place] perspective the noise is a definite concern, and one can suggest elaborate plans in the environmental management plan (EMP) to decrease noise, for example that electric trucks must be used [but it must in the end be practical and achievable]. Thus, suggestions in the EMP include aspects such as that trucks should not have to stop as they move through town, thus reducing noise caused by brakes as well as the truck's engine as it accelerates again. He said that if trucks can be allowed to move through four way stops without stopping [regulated by marshals to prevent incidents] noise levels can be reduced to some degree. As the project evolves it may become feasible to, someday, look into electrical trucks as money is generated and the project grows. It is however impossible to say that noise will be eliminated completely. Ms. Fleidl noted that from her point of view the trains are bigger culprits than trucks when it comes to noise. Mr. de Villiers said that the

speed bumps near his house are the cause of a lot of truck noise. Dr. Faul noted that removing the speed bumps is exactly the type of thinking that should go into this matter and asked if the speed bumps are really necessary [speed bumps force trucks to decelerate and accelerate as well as cause noise when it passes over the bump. Other means of speed enforcement are possible]. He noted that unfortunately, or fortunately depending on your perspective, Lüderitz will always be a port town and that will always come with some noise.

Mr. Calvin Mwiya said that economically the project is positive and the community will be happy if the project continues. He asked who will be employed for the transshipment component of the project and said that the community should get use to the noise as there is definite economic benefits. Dr. Faul said that all impacts will always be considered, and measures proposed to mitigate it, included in the EMP. Mr. Kooper said locals must benefit from transshipment employment opportunities. Mr. Ulf Grünewald stressed that the residents may get used to the noise, but guests at guesthouses will be affected and if they give bad reviews for establishments, they and the town in general can be negatively affected. He further enquired about the possible stockpile areas and the truck staging area outside of Lüderitz, as mentioned in the presentation. Dr. Faul explained that it may be possible that some of the transporters have stockpile areas along the route, for example at Keetmanshoop or the border, but not necessarily. A truck staging area outside of Lüderitz will be established to aid with the regulation of traffic through town. It will also host the weighbridge. No ore will however be offloaded or stockpiled at the truck staging area. Mr. Kohlstaedt mentioned that economically, another stockpiling area outside of Lüderitz, does not make sense due to the double handling. Mr. Grünewald then mentioned that all these types of EIAs are conducted and EMPs drafted, but when the project start, little of the proposed mitigation measures are implemented. For example, trucks do not follow the proposed roads and roads are not paved or maintained. He specifically referred to a section of Bismarck Street that Pektranam were willing to assist with paving. Dr. Faul mentioned Pektranam were willing to assist Town Council with paving the road, but since they have not started operating yet, this has not happened. He further said that it is also the responsibility of the community to police the Proponent of any EIA, as the EMP becomes a legal document that the Proponent has to comply with. Should a Proponent not comply with the EMP, anyone can lodge a complaint of non-compliance on the Ministry of Environment, Forestry and Tourism's (MEFT) website [[www.eia.met.gov.na](http://www.eia.met.gov.na)]. The MEFT is then supposed to take action and issue a compliance order to the Proponent. Legal action can be taken against non-compliance as is stated in the Environmental Management Act. It is also a requirement from Namport that regular community liaison must be conducted for the CUMET project, where the community will be specifically given the opportunity to raise concerns, complaints and suggestions. Mr Grünewald noted that for the current operations [of Tradeport], almost all the truck drivers are from South Africa and are not Namibians. André Faul noted this and said that the idea is that such opportunities should first go to Namibians. In EMPs that Geo Pollution Technologies (GPT) prepare, it is always indicated that employment and procurement of goods and services should first be local, then regional, then national and only then internationally.

Ms. Elretha Mungunda mentioned that she did not see anything in the presentation on wildlife conservation and mentioned that the B4 road borders both the Namib Naukluft Park and the Tsau //Khaeb National Park. Wildlife moves over the road and there are collisions between the trucks and animals like oryx and ostriches. She asked if the EIA/EMP will address these. Dr. Faul mentioned that this falls outside of the scope of the current EIA, but was extensively addressed in the EIA he prepared for Pektranam. Driver education (vigilance and reporting of incidents), additional speed limits at night in the park, demarcation of hotspot areas of, for example, brown hyenas and wild horses, have all been proposed as preventative and mitigation measures to protect wildlife. It may be possible that the Proponent communicate these issues to the various transporters that may come into play once the project commence.

Dr. Jean-Paul Roux mentioned that it is not always easy to find the EMPs of some projects. He requested Namport to communicate the EMP of the current manganese operations to the local community. He then suggested that GPT clarify Namport's environmental standards and compare them with the National standards [where available]. He also suggested that since no National rules [standards] on specifically manganese exist, that Namport should [develop] and implement their own rules [standards].

Dr Roux asked if the operations at the CUMET will be in addition to the existing operations or if it will replace existing operations. Mr. Kohlstaedt noted that the operations will be in addition to that of the existing operations, thus the volume will increase to 2,200,000 tons [720,000 tons existing and 1,480,000 new].

Dr. Roux asked whether the dust monitoring in the harbour, which was prescribed in the EMP for existing operations, is being conducted. Mr Kooper mentioned that it is taking place and Namport is receiving reports on dust monitoring. Dr. Roux asked if the reports are available to the public as is mentioned in the EMP and Mr. Kooper confirmed that it is available upon request from Namport.

Mr. Ignatius Tjipura expressed his concern on specifically stones [manganese ore] falling from trucks in the streets and on the main road out of Lüderitz. He said it must be addressed in the EMP as it can cause fatal accidents for example when rocks are stuck between wheels and become dislodged when the truck travels out of the port. Dr. Faul mentioned that rumble grids can be installed at the exit of the warehouse in the port. It can then dislodge rocks stuck between tyres or shake loose stones lying somewhere on the truck. This will be added to the EMP. Mr. Kooper indicated that they requested current operations to install rumble grids.

Mr. Tjipura mentioned that there is a dirt road that they want to upgrade specifically for the trucks. They requested the Road Fund Administration to assist with the cost, but they indicated they cannot and that the trucking companies should assist. He stressed that this is a matter that should be considered by all companies involved in transport of goods to and from the harbour.

Mr. de Villiers noted that the proposed operations [berthing of vessels at the quay] will last about 11 days, the current operator already utilise 6 to 9 days, and a container vessel is another 4 days. This is 21 [to 24 days] in total and he asked how sufficient time / space for existing port users will be made available. A discussion ensued regarding this matter and the Port Captain, Mr. Alexey Zavitaev, noted that they will always ensure that space is available for fishing vessels.

Mr. Thomas Shipepe asked if the proposed industrial hub [Angra Point Deep Water Port] is still on the table, should there in future be an additional increase in other types of cargo. Dr. Faul explained that Angra Point is a sensitive area in terms of vegetation, archaeology, tourism, etc. and the fact that it is within an Important Bird Area, a rock lobster sanctuary, and the Namibian Islands' Marine Protected Area. It is thus a complicated area that requires additional environmental assessment. It is Namport's prerogative to do further investigation into the proposed port. Mr. Shipepe noted that Lüderitz should now look at alternatives for additional capacity or alternatives. A short discussion ensued on what other port development options are available in southern Namibia and Oranjemund was mentioned as the only possible alternative.

Another discussion on the upgrade of roads and the "social responsibility" of the Proponent, to for example upgrade the gravel road in town, ensued. Dr. Faul mentioned that the responsibility to upgrade roads lies with the custodians of those roads such as Town Council or Roads Authority [that is why levies and taxes are paid]. Pektranam however did indicate their willingness to, for example, assist in this regard.

Ms. Mungunda asked where the staging area is proposed to be situated and whether it will be in the park. It was noted by Dr. Faul that the staging area will likely be located in the new industrial area of Lüderitz near NATIS.

Dr. Kemper asked about the warehouse design and standard. She asked if storm water will be channelled to prevent pollution of the sea and if the structure will withstand the environmental conditions. Mr. Kohlstaedt stated that Namport, as part of the tender requirements, requested an annual engineering report on the warehouse and its maintenance. The lease is a 10 year lease and thus the warehouse must be built to be fit for purpose for 10 years. Significant investments will be made to ensure the warehouse is of the required standard.

Ms. Fleidl asked if fresh or seawater will be used for dust suppression. Mr. Kohlstaedt said freshwater, but it will be very limited volumes as pooling and puddles are not allowed and you don't want to add too much water to the ore. Dr. Faul indicated that the current supply volumes of potable water for

Lüderitz is still exceeding the demand and that adding too much water to the ore becomes dangerous for the vessel it is loaded onto due to instability caused by water movement in the holds.

As a final comment, Mr. Shipepe noted that Town Council may, if operators do not comply to specifications, stop operations.

There being no further comments the meeting was adjourned at 16:25.

**Comments Received via E-mail**

<b>Email from Paul Hendrick Samuel Herero (17 October 2021)</b>	<b>Comment</b>
<p>I hereby wish to register for the consultation meeting to be conducted;</p> <ol style="list-style-type: none"> <li>1. Pollution control and management</li> <li>2. How our community will benefit in terms of job security and business opportunities (social responsibility etc.)</li> <li>3. Road maintenance plan</li> </ol> <p>It indeed is a welcome gesture and the economic spin-offs should impact positively.</p>	<p>Noted and addressed in the report</p>
<b>Email from Ulf Grünewald (12 October 2021)</b>	
<p>I would like to be registered as a interested party. Please let me know any details. Is this planned by the current magnesium company transporter Or is this a new company?</p>	<p>It is a new venture that will be managed as a common user manganese terminal. Anyone complying to Namport's conditions can export manganese ore via the terminal</p>
<b>Email from Jessica Kemper(15 November 2021)</b>	
<p><b>In response to the Minutes of the Meeting:</b></p> <p>Thank you for the minutes of the meeting. One minor clarification from my side:</p> <p>Regarding the building standards, I was referring to the effective management of effluents that will be generated primarily through dust suppression inside the warehouse and the hosing down / cleaning of the floor of the warehouse. As such I would propose some form of self-contained waste management system as part of the warehouse design, to make sure that none of the "manganese soup" effluent ends up in the ocean, the storm water drains (which ultimately also end up in the ocean), or the town's waste water system (not sure what effects cumulative manganese concentrations would have on the treatment plant and the water that is being used downstream of the sewage treatment facility at the green scheme there – or the host of animals that forage downstream of the treatment plant).</p> <p>In addition to what was discussed in the public meeting, I also urge the planned operations to look at ways to minimise dust generation during loading ships by skips. As you mentioned in your presentation, it will probably take some time before the conveyor belt system can be implemented and that skips will be used in the meantime. The current operation uses open skips, and despite mitigation measures such as dampening that may currently be used in loaded open skips, each and every skip still releases manganese dust when lifted out of the ship's hold. I spent an hour or so after the public meeting observing the current operation, and without fail, dust – albeit relatively small amounts in most instances – is released after each skip is emptied. The colour of the paving at the entrance / exit of the current warehouse, and between the warehouse and the quayside is also evidence that dust accumulates outside the warehouse – particularly during ship loading. Cumulatively, this could have long-term consequences for the residents living on Shark Island as well as the mariculture industry downstream, opposite Penguin and Seal islands. It could also affect the quality of fish being off-loaded elsewhere in the harbour, depending on the wind direction and strength. I am sure that there are ways to further minimise dust generation during loading, either through the use of tarpaulins or a way of shaking / brooming off dust while the skip is suspended in the ship's belly.</p> <p>I am attaching two photos to give you an idea about the manganese dust escaping after skips have been offloaded inside the ship's hold during</p>	<p>Clarification noted and concerns forwarded to the Proponent for consideration. Any surface pooling contaminated with manganese ore / dust may not enter any sewers or storm water drains or be allowed to enter the ocean.</p>

current operations and perhaps to help you come up with additional mitigation measures in your EMP.





## **Appendix B: Consultants' Curriculum Vitae**



**ENVIRONMENTAL SCIENTIST****André Faul**

André entered the environmental assessment profession at the beginning of 2013 and since then has worked on more than 150 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	:	20
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	EMTSS, 2017
Basic Fire Fighting	EMTSS, 2017

**PROFESSIONAL SOCIETY AFFILIATION:**

Environmental Assessment Professionals of Namibia (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
Contract Reports	+150
Research Reports & Manuals:	5
Conference Presentations:	1