

**APP-001200**

**OCEANGROWN NAMIBIA**

**MARICULTURE ACTIVITIES OF OCEANGROWN NAMIBIA AT LÜDERITZ  
ENVIRONMENTAL ASSESSMENT SCOPING REPORT**



**Assessed by:**




**Assessed for:**

**Oceangrown Namibia CC**


December 2021



<b>Project:</b>	<b>MARICULTURE ACTIVITIES OF OCEANGROWN NAMIBIA AT LÜDERITZ: ENVIRONMENTAL ASSESSMENT SCOPING REPORT</b>	
<b>Report:</b>	Final	
<b>Version/Date:</b>	December 2021	
<b>Prepared for: (Proponent)</b>	Oceangrown Namibia CC P.O. Box 305 Lüderitz, Namibia	
<b>Lead Consultant</b>	Geo Pollution Technologies (Pty) Ltd PO Box 11073 Windhoek, Namibia	TEL.: (+264-61) 257411 FAX.: (+264) 88626368
<b>Main Project Team:</b>	<b>André Faul</b> (B.Sc. Zoology/Biochemistry); (B.Sc. (Hons) Zoology); (M.Sc. Conservation Ecology); (Ph.D. Medical Bioscience) <b>Wikus Coetzer</b> (B.Sc. Environmental and Biological Sciences); (B.Sc. (Hons) Environmental Sciences)	
<b>Cite this document as:</b>	Faul A, Coetzer W. 2021 December. Mariculture Activities of Oceangrown Namibia at Lüderitz: Environmental Assessment Scoping Report	
<b>Copyright</b>	Copyright on this document is reserved. No part of this document may be utilised without the written permission of Geo Pollution Technologies (Pty) Ltd.	
<b>Report Approval</b>	 <b>André Faul</b> Conservation Ecologist	

I, Jason Burgess, acting as the Proponent's representative (Oceangrown Namibia CC), 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 Lüderitz on the 8 day of December 2021.

  
Oceangrown Namibia CC

CC/2013/05088  
Registration No.



## SUMMARY

Oceangrown Namibia CC requested Geo Pollution Technologies (Pty) Ltd to undertake an environmental assessment for their oyster and abalone mariculture activities at Lüderitz. Culturing of the Pacific oyster (*Crassostrea gigas*) and ranching of South African abalone (*Haliotis midae*) have already been practiced at Lüderitz for many years. In short, oyster mariculture involves the offshore installation of long lines to which grow-out baskets, filled with juvenile oysters, are attached. Once the oysters reach marketable size they are collected for processing. Abalone ranching involves releasing of abalone spat into the sea area for settlement and collection of market size abalone by diving. The Proponent propose to culture oysters within the existing mariculture farm area in Lüderitz Harbour, while ranching of abalone will be in selected offshore locations between Lüderitz and Possession Island.

















The environmental assessment is conducted to determine all environmental, safety, health and socio-economic impacts associated with the proposed mariculture activities. Relevant environmental data was compiled by making use of secondary data and from a reconnaissance site visit. Potential environmental impacts and associated social impacts were identified and are addressed in this report.

Due to the nature of the proposed operations, impacts can be expected on the surrounding environment, see summary impacts table below. The majority of activities related to mariculture will take place offshore while only processing will take place in existing facilities at the Lüderitz Boatyard. It is recommended that environmental performance be monitored regularly to ensure regulatory compliance and that corrective measures be taken if necessary.

Mariculture, including abalone mariculture and its ranching, is advocated in various plans of the Ministry of Fisheries and Marine Resources as well as the national development plans and Vision 2030. The Proponent's operations will play a role in providing a much needed contribution to the employment and economy of Lüderitz. The major concerns related to the project are that of potential poaching of abalone, harm to birds on rocky shores and sandy beaches, disease and parasite introduction, surface water contamination, and a reduction in water quality. These will however be limited by adherence to permit requirements and the implementation and maintenance of a biosecurity plan. By appointing local contractors and employees and implementing educational programs, the positive socio-economic impacts can be maximised while mitigating any negative impacts. Oyster and abalone mariculture, if conducted responsibly, are not expected to have a negative impact on the local ecosystem nor expected to become invasive. Careful monitoring of the marine environment is however recommended.

The environmental management plan (EMP) and in-house health and safety plans should be used as an on-site reference document during development and operational activities of the mariculture farm. This document and its supporting impact assessment should be reviewed on a regular basis, in order to ensure that it is still relevant to the activities executed on site. Parties responsible for transgression of the EMP should be held responsible for any rehabilitation that may need to be undertaken. Operators and responsible personnel must be taught the contents of these documents.

**Impact summary class values**

Impact Category	Impact Type	Operations	
	<i>Positive Rating Scale: Maximum Value</i>	5	
	<i>Negative Rating Scale: Maximum Value</i>		-5
EO	National Development Strategy: Investment in Mariculture		4
EO	Contribution to the National Economy		4
EO	Skills, Technology and Development		3
EO	Employment and Remuneration		3
SC	Demographic Profile and Community Health		-2
SC	Traffic		-2
SC	Health, Safety and Security		-2
PC	Noise		-1
PC	Waste Production		-2
BE	Terrestrial Ecosystem and Biodiversity Impact		-2
BE	Impacts on Marine Ecology		-3
PC	Surface Water Contamination		-2
SC	Visual Impact		-2
	Cumulative Impact		-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>1</b>
<b>3</b>	<b>METHODOLOGY</b> .....	<b>2</b>
<b>4</b>	<b>DEVELOPMENT AND OPERATIONS</b> .....	<b>2</b>
4.1	OYSTER FARMING .....	2
4.2	ABALONE RANCHING .....	4
4.2.1	<i>General Biology</i> .....	4
4.2.2	<i>Current Status and Mariculture</i> .....	5
4.2.3	<i>Sourcing of Juvenile Abalone and Acclimation</i> .....	5
4.2.4	<i>Abalone Ranching</i> .....	6
4.2.5	<i>Biosecurity and Disease Management</i> .....	7
4.3	ONSHORE FACILITIES AND EMPLOYMENT .....	9
<b>5</b>	<b>ALTERNATIVES</b> .....	<b>10</b>
<b>6</b>	<b>ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS</b> .....	<b>11</b>
6.1	THE ENVIRONMENTAL MANAGEMENT ACT .....	14
<b>7</b>	<b>ENVIRONMENTAL CHARACTERISTICS</b> .....	<b>14</b>
7.1	LOCALITY AND SURROUNDING LAND USE .....	14
7.2	CLIMATE .....	15
7.3	PUBLIC WATER SUPPLY .....	16
7.4	ECOLOGY .....	17
7.5	DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS .....	19
7.6	CULTURAL, HERITAGE AND ARCHAEOLOGICAL ASPECTS .....	20
<b>8</b>	<b>PUBLIC CONSULTATION</b> .....	<b>21</b>
<b>9</b>	<b>MAJOR IDENTIFIED IMPACTS</b> .....	<b>21</b>
9.1	SOCIO-ECONOMIC IMPACTS .....	21
9.2	HEALTH, SAFETY AND SECURITY IMPACTS .....	21
9.3	WASTE PRODUCTION .....	22
9.4	TRAFFIC IMPACTS .....	22
9.5	SURFACE WATER CONTAMINATION .....	22
9.6	IMPACTS ON MARINE AND COASTAL BIOTA.....	22
9.6.1	<i>Physical Impacts</i> .....	22
9.6.2	<i>Diseases and Parasites</i> .....	22
9.6.3	<i>Ecosystem and Biodiversity Impacts</i> .....	22
9.6.4	<i>Entanglement</i> .....	23
<b>10</b>	<b>ASSESSMENT AND MANAGEMENT OF IMPACTS</b> .....	<b>23</b>
10.1	RISK ASSESSMENT AND ENVIRONMENTAL MANAGEMENT PLAN .....	24
10.1.1	<i>Planning</i> .....	25
10.1.2	<i>National Development Strategy: Investment in Mariculture</i> .....	26
10.1.3	<i>Contribution to the National Economy (Revenue &amp; Investment Confidence)</i> .....	27
10.1.4	<i>Employment and Remuneration</i> .....	28
10.1.5	<i>Skills, Technology and Development</i> .....	29
10.1.6	<i>Demographic Profile and Community Health</i> .....	30
10.1.7	<i>Traffic</i> .....	31
10.1.8	<i>Health, Safety and Security</i> .....	32
10.1.9	<i>Noise</i> .....	33
10.1.10	<i>Waste Production</i> .....	34
10.1.11	<i>Terrestrial Ecosystem and Biodiversity Impact</i> .....	35
10.1.12	<i>Impacts on Marine and Coastal Biota</i> .....	36
10.1.13	<i>Surface Water Contamination</i> .....	38
10.1.14	<i>Visual Impact</i> .....	39
10.1.15	<i>Cumulative Impact</i> .....	40

10.2	DECOMMISSIONING AND REHABILITATION .....	41
10.3	ENVIRONMENTAL MANAGEMENT SYSTEM.....	41
11	CONCLUSION.....	41
12	REFERENCES.....	43

### **LIST OF APPENDICES**

APPENDIX A:	DRAFT BIOSECURITY AND DISEASE MANAGEMENT GUIDELINES .....	45
APPENDIX B:	MOLLUSCAN SHELLFISH SAMPLING SCHEDULE.....	49
APPENDIX C:	PUBLIC CONSULTATION.....	51
APPENDIX D:	REGISTERED IAPs AND COMMENTS RECEIVED.....	61
APPENDIX E:	CONSULTANTS' CURRICULUM VITAE.....	63

### **LIST OF FIGURES**

FIGURE 2-1.	PROJECT LOCATION.....	2
FIGURE 4-1.	OYSTER FARM LOCATIONS.....	3
FIGURE 4-2.	NATURAL RANGE OF <i>H. MIDAE</i> AND EXISTING RANCHING AREAS OUTSIDE OF THE NATURAL RANGE IN SOUTH AFRICA, IN RELATION TO LÜDERITZ .....	6
FIGURE 4-3.	ABALONE RANCHING AREAS.....	8
FIGURE 4-4.	ONSHORE PROCESSING FACILITIES .....	9
FIGURE 7-1.	TOWNLANDS AND MINING LICENCE AREAS .....	15
FIGURE 7-2.	LÜDERITZ POTABLE WATER SUPPLY AND DEMAND STATISTICS (SOURCE: PERS. COMM. NAMWATER).....	17
FIGURE 7-3.	PROTECTED AREAS .....	19

### **LIST OF PHOTOS**

PHOTO 4-1.	OPEN WOODEN BASKET WITH OYSTER SPAT.....	4
PHOTO 4-2.	OYSTER SPAT .....	4
PHOTO 4-3.	EXAMPLE OF LONG LINES .....	4
PHOTO 4-4.	ANCHOR BLOCKS .....	4
PHOTO 4-5.	LARGER BASKET .....	4
PHOTO 4-6.	GROW OUT BASKETS.....	4
PHOTO 4-7.	<i>HALIOTIS MIDAE</i> (PHOTO: TWO OCEANS AQUARIUM.....	9
PHOTO 4-8.	<i>HALIOTIS MIDAE</i> CLOSE-UP (PHOTO: ADELLE ROUX).....	9
PHOTO 4-9.	ONSHORE PROCESSING FACILITY AT LÜDERITZ BOATYARD .....	10
PHOTO 4-10.	PROCESSING EQUIPMENT IN STORAGE .....	10

### **LIST OF TABLES**

TABLE 5-1.	ALTERNATIVE COMPARISON TABLE .....	10
TABLE 6-1.	NAMIBIAN LAW APPLICABLE OF SPECIFIC INTEREST .....	11
TABLE 6-2.	RELEVANT MULTILATERAL ENVIRONMENTAL AGREEMENTS FOR NAMIBIA.....	13
TABLE 7-1.	SUMMARY OF CLIMATE DATA (ATLAS OF NAMIBIA PROJECT, 2002).....	16
TABLE 7-2.	KEY BIRD SPECIES IN IBA NA017 (LIST NOT EXHAUSTIVE).....	18
TABLE 7-3.	DEMOGRAPHIC CHARACTERISTICS OF LÜDERITZ BAY, THE //KARAS REGION AND NATIONALLY (NAMIBIA STATISTICS AGENCY, 2011) .....	20
TABLE 10-1.	ASSESSMENT CRITERIA .....	23
TABLE 10-2.	ENVIRONMENTAL CLASSIFICATION (PASTAKIA 1998) .....	24
TABLE 11-1.	IMPACT SUMMARY CLASS VALUES .....	42



## LIST OF ABBREVIATIONS

<b>AIDS</b>	Acquired Immune Deficiency Syndrome
<b>BE</b>	Biological/Ecological
<b>BOD</b>	Biological Oxygen Demand
<b>COD</b>	Chemical Oxygen Demand
<b>DEA</b>	Directorate of Environmental Affairs
<b>DSP</b>	Diarrhetic Shellfish Poisoning
<b>DWA</b>	Department of Water Affairs
<b>EA</b>	Environmental Assessment
<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>GPT</b>	Geo Pollution Technologies
<b>HIV</b>	Human Immunodeficiency Virus
<b>HSE</b>	Health, Safety and Environment
<b>IAPs</b>	Interested and Affected Parties
<b>IBA</b>	Important Bird Area
<b>ISO</b>	International Standards of Operation
<b>IUCN</b>	International Union for Conservation of Nature
<b>m/s</b>	Metre per second
<b>mbs</b>	Metres below surface
<b>MEFT</b>	Ministry of Environment, Forestry and Tourism
<b>NIMPA</b>	Namibian Islands Marine Protected Area
<b>mm/a</b>	Millimetres per annum
<b>MSDS</b>	Material Safety Data Sheet
<b>PC</b>	Physical/Chemical
<b>PPE</b>	Personal Protective Equipment
<b>ppm</b>	Parts per million
<b>PSP</b>	Paralytic Shellfish Poisoning
<b>SC</b>	Sociological/Cultural
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>WHO</b>	World Health Organization



## 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.

**Aquaculture** – The farming and ranching of aquatic organisms.

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

**Biota** – The animal and plant life of a specific region, habitat, or geological period.

**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.

**Long line** - is a rope anchored in the ocean at both ends with concrete blocks or steel beams while being kept afloat by buoys or plastic drums of various sizes

**Mariculture** - The farming and ranching of specifically marine organisms.

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

**Non-native** – a plant or animal introduced to an environment that is not the location of its natural occurrence

**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 & 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

---

Oceangrown Namibia (the Proponent) was established in 2007 and since then operated in the mariculture industry at Lüderitz, //Karas Region. Oceangrown Namibia focus on the culturing of Pacific oysters (*Crassostrea gigas*) and ranching of South African abalone (*Haliotis midae*). The mariculture of both these species have been ongoing at Lüderitz for many years. The Proponent, Oceangrown Namibia, requested Geo Pollution Technologies (Pty) Ltd to undertake an environmental assessment for their mariculture activities. The offshore locations for oyster culturing and abalone ranching, as well as the location of the onshore processing facility, are indicated in Figure 2-1. Oysters are cultured on long lines in baskets, while ranching of abalone involves releasing juvenile abalone into the sea. A detailed description of the activities is provided in section 4.

The environmental assessment was undertaken to determine the potential impact of the mariculture activities 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”.

The environmental assessment report with an accompanying environmental management plan (EMP) are used to apply for an environmental clearance certificate in compliance with Namibia’s Environmental Management Act (Act No 7 of 2007).

**Project Justification** – Mariculture is one of the key aspects of the “Fishery Strategies and Desired Outcomes, 2017 – 2022”, forming part of the National Development Plan 5 (NDP 5) of Namibia. The strategy promotes mariculture as a viable economic option and NDP 5 promotes investment in the mariculture sector. This is in line with Namibia’s Vision 2030, which recognises the potential of the mariculture industry and promotes its development. Specifically, the draft Master Plan for Marine Aquaculture in Namibia of 2012 promotes abalone mariculture and specifically also ranching ([www.mfmr.gov.na](http://www.mfmr.gov.na)). It states: “***The project [abalone ranching] has relatively low fixed capital requirements and extremely high margins and profitability once in full production. The project should therefore over time provide very high levels of returns that compensate for the initial high risk.***”

Through the Proponent’s mariculture activities, local industry is diversified with increased resilience. Oceangrown Namibia has established international markets for both oysters and abalone and thus contributes to Namibia’s trade balance through exports. The Proponent also contributes to employment and development in Lüderitz. Benefits of the project include:

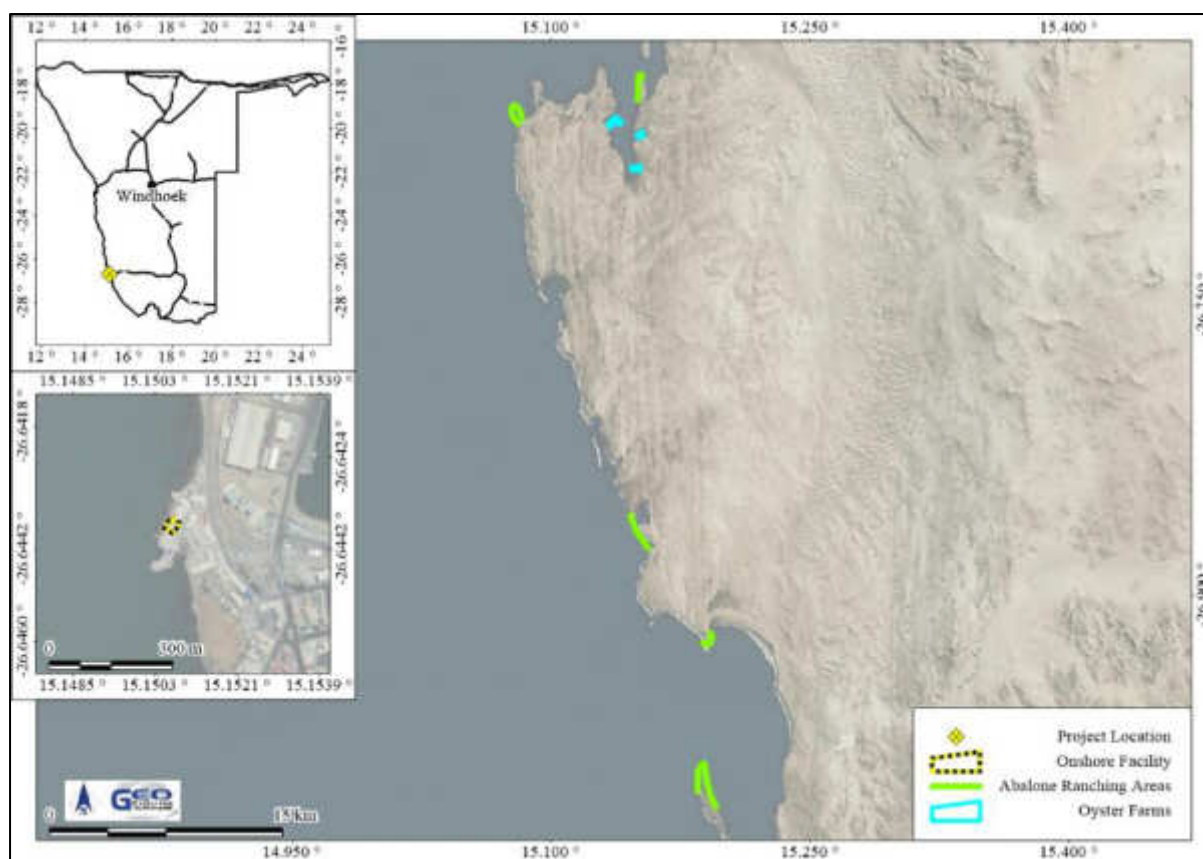
- ◆ Economic development, diversification and resilience in Lüderitz.
- ◆ Contribution to the economy and export trade of Namibia.
- ◆ Employment, training and skills development.

## 2 SCOPE

---

The scope of the environmental assessment is to:

1. Determine the potential environmental impacts emanating from the mariculture 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 to make an informed decision regarding the mariculture activities.



**Figure 2-1. Project location**

### 3 METHODOLOGY

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

1. Baseline information about the site and its surroundings was obtained from existing secondary information as well as primary information obtained during various previous site visits by the consultant.
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.

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 Proponent has been culturing oysters (*C. gigas*) and ranching abalone (*H. midae*) for many years. The following section provides a description of the operational processes for each species.

#### 4.1 OYSTER FARMING

Oysters will be cultured offshore in the existing declared mariculture farm areas 14, 17 and 20. In their natural environment, oysters release sperm and eggs into the surrounding water where fertilisation takes place. After fertilisation, free-swimming larvae will, after some time, attach to suitable substrate at which stage they are generally referred to as spat. Here they will grow and reach maturity in about one year. The oyster larvae obtained for culturing are thus commonly referred to as spat. Beira Aquaculture in Swakopmund has the only hatchery for oysters in Namibia and is the local supplier of spat to the mariculture industry. This supply of spat is also augmented by individual farmers from international suppliers when required and this is done with the necessary approval and documentation like phytosanitary certificates and import permits.

Once obtained, the spat is placed in small wooden baskets with polyethylene netting (Photo 4-1 and Photo 4-2) and is attached to long lines in the offshore farm (Photo 4-3). Long lines are ropes anchored at both ends with concrete blocks or steel beams (Photo 4-4) and kept afloat by buoys or plastic drums of various sizes. Where steel beams are used, they are jettied into the sediment, which reduces the amount of oxygen it comes into contact with, and thus slows down corrosion.

As the oysters grow, they are periodically removed from the ocean and transferred into bigger baskets (Photo 4-5 and Photo 4-6) until they are ready for marketing. Each time oyster containing baskets are retrieved, the baskets are cleaned by pressure washing and the oysters are sorted according to size and returned to bigger baskets, thereafter being returned to the ocean. Once a basket has marketable sized oysters, they are processed at the onshore facility for shipping to clients.

Oysters are filter feeders that feed mainly on microscopic phytoplankton (generally referred to only as plankton). This diet consists mainly of algae and oysters filter approximately 50 litres of water per day to obtain enough food. Oysters feed only on naturally occurring plankton within the marine waters where they are cultured and no artificial feed is required. No chemicals or antibiotics are used during this process.

Regular sampling and testing of oysters and mussels for heavy metals, paralytic shellfish poisoning (PSP) and diarrhetic shellfish poisoning (DSP) are conducted (see Appendix B). This is in line with the requirements of the mariculture industry as performed by the Namibia Standards Institution.



**Figure 4-1. Oyster farm locations**



**Photo 4-1. Open wooden basket with oyster spat**



**Photo 4-2. Oyster spat**



**Photo 4-3. Example of long lines**



**Photo 4-4. Anchor blocks**



**Photo 4-5. Larger basket**



**Photo 4-6. Grow out baskets**

## 4.2 ABALONE RANCHING

### 4.2.1 General Biology

Abalones are gastropods or marine snails belonging to the phylum Mollusca and family Haliotidae. All abalones belong to the genus *Haliotis* and they have worldwide distribution except for the South American Pacific coast, North American Atlantic coast, the Arctic and Antarctica. The South African abalone (*H. midae*), naturally occurs along the South African coastline from Cape Columbine on the West Coast, to north of Port St. Johns on the East Coast (Wood, 1993). It is the largest of the South African abalone species (Wood, 1993).

Abalone are dioecious broadcast spawners which means they have male and female reproductive organs in separate individuals, and they release their gametes into the environment where fertilisation takes place (Wood, 1993; Visser-Roux, 2011). Larvae are not protected and go through various stages of development until the veliger larvae settles on the seafloor after about a week.



Abalone are herbivores that inhabit rocky substrates in the subtidal zone (mainly shallow intertidal and subtidal reefs) with a high degree of niche specialisation (Wood, 1993). Niche specificity is determined by both availability of food and the presence of predators. Abalone are nocturnal. Smaller abalone hide for safety during the day, while larger abalone rely on their thick, strong shells for protection from predators. Small abalone (spat) graze on diatoms and algae, while large individuals mainly feed on drift kelp by trapping it under their muscular foot (Visser-Roux, 2011; Zeeman et al., 2012).

#### **4.2.2 Current Status and Mariculture**

Abalone is a sought after delicacy, especially in the Asian countries of Hong Kong and China. As a result of high prices paid for abalone, the wild populations of *H. midae* are severely exploited through illegal poaching. Although not listed as a threatened species by the International Union for the Conservation of Nature (IUCN), most natural populations have been decimated through illegal trade.

The commercial culturing of abalone is a major mariculture activity in South Africa. In 2019, 14 abalone farms were active and the cumulative production was 1,657 tons worth N\$1 billion (<https://pmg.org.za>). The industry sustained about 2,000 permanent jobs, but the COVID-19 pandemic has negatively impacted this (<https://pmg.org.za>). Abalone however remains the most productive aquaculture organism in South Africa.

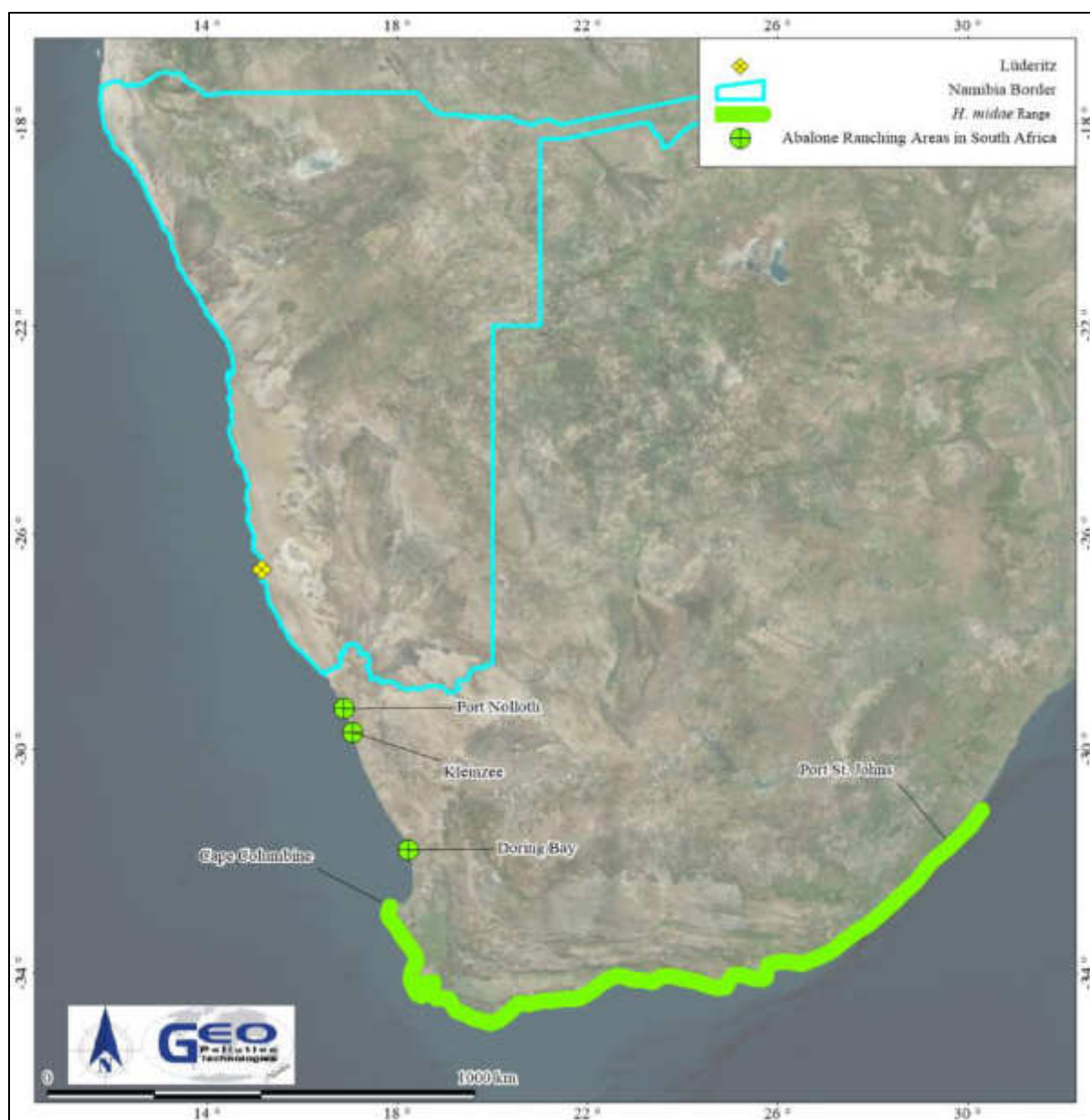
*Haliotis midae* is a non-native to Namibian waters and was introduced to Lüderitz in the early 2000's. Lüderitz is situated about 730 km north of the northernmost fringe of its natural habitat at Cape Columbine, South Africa (Figure 4-2). In-between Cape Columbine and Lüderitz, *H. midae* has been ranched in the vicinity of Port Nolloth and Kleinsee, outside of its natural habitat, for many years (Figure 4-2). Furthermore, the South African Department of Forestry, Fisheries and the Environment has as recently as 28 May 2021, invited applicants to apply for the right to ranch abalone in a 7 km stretch of sea between Doring Bay and Strandfontein, also outside of its natural habitat (Republic of South Africa Government Gazette No. 44636).

In Namibia, abalone is both cultured on land and ranched within the sea at Lüderitz. For sea-based ranching, juvenile abalone has to be produced on land and then released into the ocean (resettled) at suitable habitats. Once grown-out, the abalone are retrieved by divers for onshore processing and export. This resettlement of abalone is an ongoing process, since they do not reproduce and proliferate naturally in the water around Lüderitz. The same is true for the ranching projects in the Northern Cape of South Africa (Massie et al., 2018). Thus, abalone has not in the past, nor is it expected to in future, naturally establish or become invasive around Lüderitz.

#### **4.2.3 Sourcing of Juvenile Abalone and Acclimation**

Juvenile abalone will be sourced from abalone mariculture farms in South Africa according to the procedures as prescribed by the Ministry of Fisheries and Marine Resources, mainly as contained in Government Notice No. 71 of 2010: Regulations Relating to Import and Export of Aquatic Organisms and Aquaculture Products: Aquaculture Act, 2002. As part of the phytosanitary requirements (issuing of a health certificate) for the importing of living organisms, all abalone will be vetted for any pathogens or other pathologies in South Africa. Once certified disease free by Amanzi Biosecurity and a veterinary health certificate from the state veterinarian is issued, an import permit will be issued in Namibia and an export permit in South Africa, and the abalone will be transported to Lüderitz.

Once at Lüderitz, the abalone will be placed into the seawater containing holding tanks for acclimation. It will be a flow through system pumping seawater at an average volume of 170 l/hour. The tanks will contain several baskets that will be populated with the juvenile abalone. They will be fed with abfeed or with sea lettuce (*Ulva* spp.). *Ulva* will be collected from the Proponent's oyster mariculture area, where it grows naturally on the long lines. About 20 kg of sea lettuce is required per abalone seeding.



**Figure 4-2. Natural range of *H. midae* and existing ranching areas outside of the natural range in South Africa, in relation to Lüderitz**

#### 4.2.4 Abalone Ranching

The Proponent has identified five areas along the coast, from Lüderitz southwards, where suitable habitat is present for abalone ranching (Figure 4-3). The areas are: a 1.8 km stretch from the northern tip of Shark Island southwards in Lüderitz Lagoon; a 2 km stretch around Halifax Island; a 2.1 km stretch at Abenteuer Bay; 1.1 km around EBay Point; and 4.4 km around Possession Island.

Within the three areas, a 50 meter wide water area will be targeted which will have its landside border located at the spring low water mark. Not all areas will eventually be 50 m wide, since water depth is a limiting factor in the establishment of abalone. *H. midae* are most frequently found in water up to 10 m deep, but may be deeper in certain locations (Barkai & Griffiths, 1986). As they feed on photosynthesising algae which require sunlight, and the water off the coast of Namibia is relatively turbid, only shallower water will have enough food available to sustain the abalone. Ultimately, the sites that will be targeted within the five broader areas will depend on, among others, habitat suitability, accessibility and wave exposure.

Carrying capacity for abalone will vary between locations and will mostly depend on the availability of food, shelter and the type of substrate. In South Africa, the density of natural populations of *H. midae* ranges between 0.08/m<sup>2</sup> and 11.45/m<sup>2</sup> (individuals per square meter) with an average of 3/m<sup>2</sup> (South African Government Gazette 334720 of 2010). The “Guidelines and Potential Areas for Marine Ranching and Stock Enhancement of Abalone *Haliotis midae*” of the South African Department of Agriculture, Forestry and Fisheries (South African Government Gazette 334720 of 2010), also suggest 3/m<sup>2</sup> as the indicated density to consider for ranching. It then further suggests that frequent monitoring be conducted to ensure optimum stocking density in the long term. The Proponent, based on years’ of experience in abalone ranching at Lüderitz, will resettle abalone at a density of approximately 4/ m<sup>2</sup>. Abalone size will mainly range between 20 mm and 40 mm when they are resettled. Once the ranching project is in progress, the Proponent will adjust stocking densities based on continuous visual observations made with respect to abalone growth and health, as well as habitat condition. As a monitoring measure, the Proponent will keep a photo record of the abalone ranching areas to determine changes to the environment over time, if any. Should changes be detected, the ranching protocol will be revised.

The areas for ranching will be reached by boat, either launching from Lüderitz, or beach launches nearer to the site, depending on weather conditions. The placement of juvenile abalone will be performed by hand or by means of releasing structures, depending on the site conditions and weather at such time. If by hand, divers with bags of abalone will visit potential sites, identify suitable substrate, and physically place abalone and ensure they attach to the substrate. This allows for very specific control over the density and locations of placement. Release structures that will be used are typically structures like pipes or plates on which abalone are settled. These are placed on the seafloor and the abalone will move of the structures and settle on suitable habitat.

New juvenile abalone will be introduced at regular intervals (about once a week) to ensure an eventual, continuous supply of marketable sized abalone. Divers will regularly visit the areas to monitor their growth and the condition of the benthic environment. Abalone will be harvested by divers, placed in bags, and transported to the Proponent’s processing facility at the Lüderitz Boat Yard.

#### **4.2.5 Biosecurity and Disease Management**

Namibia does not have a biosecurity plan in place for aquaculture activities. Instead the onus is on individual farms to establish their own protocols, with some guidance from the Ministry of Fisheries and Marine Resources and the various National Acts and Regulations (see Table 6-1 and Table 6-2). Protocols and procedures that will be followed by the Proponent are contained in Appendix A. The measures contained in Appendix A are continuously improved and updated as new information is obtained. Conditions that will be stipulated in the various permits and licences to be obtained by the Proponent, will also be added. Regular sampling and testing of abalone will be conducted according to the prescribed Molluscan Shellfish Sampling Schedule as issued by the Ministry of Fisheries and Marine Resources. The 2021/2022 schedule is attached in Appendix B.

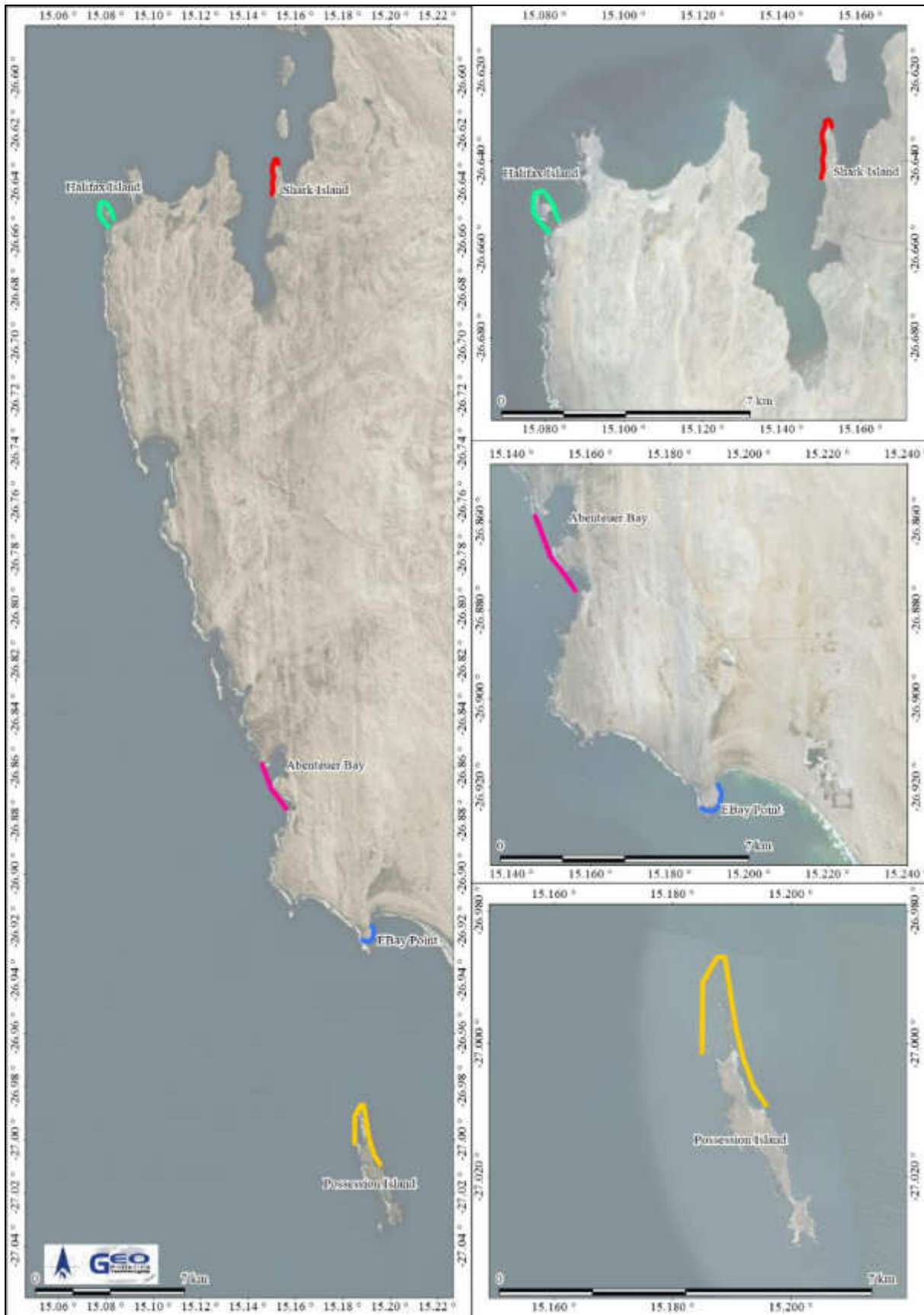
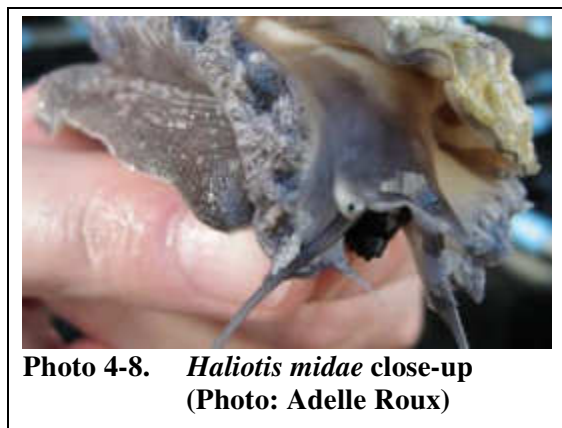
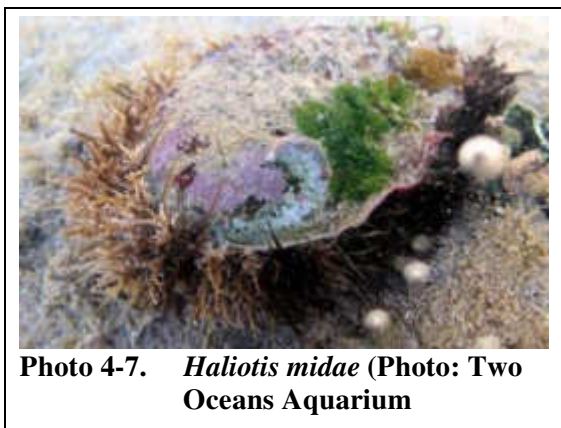


Figure 4-3. Abalone ranching areas



### 4.3 ONSHORE FACILITIES AND EMPLOYMENT

Oceangrown Namibia’s onshore processing facility is located within the Lüderitz Boatyard (Figure 4-4). It contains the holding tanks for abalone and oysters for acclimation and pre-processing purposes. Up to eight persons will be employed at the facility. Market ready oysters are cleaned by hand, sorted and weighed and placed in holding tanks until they are packaged and shipped to customers. Holding tanks contain filtered seawater and do not receive any food. This ensures their guts are empty to provide high quality oysters. Oysters are shipped alive and are kept cool and moist during the entire process. This way they can stay alive for up to a week. Abalone processing entails washing and cooking of market ready abalone. They are then shucked and dried in a drying cabinet. Dried abalone are packaged and temporarily stored until shipment.

Oysters and abalone are transported to the Hosea Kutako International Airport from where they are shipped to mainly China. Some are also distributed to the local Namibian market. All shells originating from the processing facilities are ground into a powder and is used beneficially as fertilizer by farmers, specifically for use on olive trees.





**Photo 4-9. Onshore processing facility at Lüderitz Boatyard**



**Photo 4-10. Processing equipment in storage**

## 5 ALTERNATIVES

Various alternatives were considered for the project. Table 5-1 presents some alternatives considered during the planning phase of this project.

**Table 5-1. Alternative comparison table**

Alternative Description	Advantages	Disadvantages	Preferred Alternative
<b>Location</b>			
Land based mariculture of abalone	<ul style="list-style-type: none"> <li>◆ Increased security possible to prevent theft</li> <li>◆ Better control and less natural losses</li> </ul>	<ul style="list-style-type: none"> <li>◆ Expensive infrastructure to be built</li> <li>◆ Requires time to build mariculture farm</li> <li>◆ Requires significant volumes of seawater to be abstracted at significant cost</li> <li>◆ Requires large areas of land that may come at great cost</li> </ul>	<ul style="list-style-type: none"> <li>◆ Ranching to reduce initial investment costs and to fast-track the commencement of the project. Land-based mariculture can be considered in future in addition to ranching.</li> </ul>
Ranching of abalone	<ul style="list-style-type: none"> <li>◆ No expensive infrastructure</li> <li>◆ Can commence immediately</li> <li>◆ Utilising a sustainable natural resource of Namibia (the environment) that will provide benefits in terms of employment, training, revenue generation, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>◆ Possibility of theft</li> <li>◆ More natural losses (e.g. predation)</li> <li>◆ Difficult and sometimes dangerous conditions at sea for the resettlement and collection of abalone</li> </ul>	
<b>Source</b>			
Source juvenile abalone from South Africa	<ul style="list-style-type: none"> <li>◆ No specialised infrastructure required for abalone hatchery</li> <li>◆ Reduced initial investment costs</li> <li>◆ Juvenile abalone available immediately</li> </ul>	<ul style="list-style-type: none"> <li>◆ Cumbersome import process</li> <li>◆ Transport of juvenile abalone causes unnecessary stress to the animals</li> <li>◆ Complete reliance on third-party suppliers can cause supply disruptions</li> </ul>	<ul style="list-style-type: none"> <li>◆ Source juvenile abalone from South Africa. Once the project is established and finances are generated investments can be made into the establishment of a hatchery</li> </ul>

Alternative Description	Advantages	Disadvantages	Preferred Alternative
Produce abalone spat locally	<ul style="list-style-type: none"> <li>◆ No import processes to obtain juvenile abalone</li> <li>◆ Proponent in control of the supply of juvenile abalone</li> <li>◆ Once the hatchery is established, abalone can be supplied to other abalone farms / ranchers</li> </ul>	<ul style="list-style-type: none"> <li>◆ High initial investment costs to construct the hatchery</li> <li>◆ Time required to establish the hatchery will cause delays in the project</li> </ul>	
<b>No-go</b>			
No-go Alternative	<ul style="list-style-type: none"> <li>◆ No potential impacts on the environment</li> </ul>	<ul style="list-style-type: none"> <li>◆ Reduced revenue generation for Namibia</li> <li>◆ No contributions to employment in the town</li> <li>◆ Sub-optimal utilisation of Namibia's sustainable resources</li> </ul>	<ul style="list-style-type: none"> <li>◆ Ranching of abalone and mariculture of oysters in an environmentally responsible manner with frequent monitoring and corrective action where needed (e.g. reducing stocking density if needed)</li> </ul>

## 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 6-2 govern the environmental assessment process in Namibia and/or are relevant to the operations.

**Table 6-1. Namibian law applicable of specific interest**

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>

Law	Key Aspects
<b>Marine Resources Act</b> Act No. 27 of 2000	<ul style="list-style-type: none"> <li>◆ Prevents the discharge of anything that may be injurious to marine resources or may disturb ecological balance in any area of the sea or which may detrimentally affect the marketability of marine resources, or which may hinder their harvesting.</li> <li>◆ Regulates the conservation of marine resources and ecosystems.</li> <li>◆ Regulates the protection of the Namibian Islands' Marine Protected Area.</li> </ul>
<b>Regulations Relating to Namibian Islands' Marine Protected Area: Marine Resources Act, 2000</b> Government Notice No. 316 of 2012	<ul style="list-style-type: none"> <li>◆ Delineates the Namibian Islands' Marine Protected Area.</li> <li>◆ Zones the Namibian Islands' Marine Protected Area into an all-encompassing buffer zone further divided into four zones of increasing protection status as islands and shorelines are approached.</li> <li>◆ Declares that a person may not land on or access any island, islet or rock in the Namibian Islands' Marine Protected Area unless the person is in possession of a valid permit obtained from the regional office of the Ministry of Fisheries and Marine Resources in Lüderitz.</li> <li>◆ Provides for the option of mariculture in permitted areas and under certain conditions.</li> </ul>
<b>Aquaculture Act</b> Act No. 18 of 2002	<ul style="list-style-type: none"> <li>◆ Regulates aquaculture activities to ensure sustainable development.</li> <li>◆ Provides for water quality monitoring to protect aquaculture activities.</li> </ul>
<b>Aquaculture (Licensing) Regulations: Aquaculture Act, 2002</b> Government Notice No. 246 of 2003	<ul style="list-style-type: none"> <li>◆ Provides regulations dealing with licensing, record keeping and reporting, health management, disease control and protection of the aquatic environment in so far as aquaculture facilities are concerned.</li> </ul>
<b>Regulations Relating to Import and Export of Aquatic Organisms and Aquaculture Products: Aquaculture Act, 2002</b> Government Notice No. 71 of 2010	<ul style="list-style-type: none"> <li>◆ Provides regulations dealing with the import, export, quarantine and inspection of aquatic organisms and aquaculture products.</li> </ul>
<b>The Water Act</b> Act No. 54 of 1956	<ul style="list-style-type: none"> <li>◆ Remains in force until the new Water Resources Management Act comes into force.</li> <li>◆ Defines the interests of the state in protecting water resources.</li> <li>◆ Controls the disposal of effluent.</li> <li>◆ Numerous amendments.</li> </ul>
<b>Water Resources Management Act</b> Act No. 11 of 2013	<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>Animal Health Act</b> Act No. 1 of 2011	<ul style="list-style-type: none"> <li>◆ Provide for the prevention, detection and control of animal disease.</li> <li>◆ Provide for the maintenance and improvement of animal health.</li> <li>◆ Regulates the importation and exportation of animals, animal products and restricted material into Namibia.</li> </ul>



<b>Law</b>	<b>Key Aspects</b>
<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>The Namibian Ports Authority Act</b> Act No. 2 of 1994	<ul style="list-style-type: none"> <li>◆ Provide for the establishment of the Namibian Ports Authority and its functions.</li> <li>◆ Responsible to protect the environment within its areas of jurisdiction.</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>
<b>Public and Environmental Health Act</b> Act No. 1 of 2015, Government Notice No. 86 of 2015	<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>
<b>Labour Act</b> Act No 11 of 2007, Government Notice No. 236 of 2007	<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).</li> </ul>
<b>Pollution Control and Waste Management Bill (draft document)</b>	<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>Prevention and Combating of Pollution of the Sea by Oil Amendment Act (No. 24 of 1991)</b>	<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>

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

<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>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>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</li> </ul>

Agreement	Key Aspects
	Coastal Environment of the Atlantic Coast of the West, Central and Southern Africa Region <ul style="list-style-type: none"> <li>◆ Provides an overarching legal framework for all marine-related programmes in West, Central and Southern Africa.</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>

### 6.1 THE ENVIRONMENTAL MANAGEMENT ACT

The project is listed as an activity requiring an environmental clearance certificate as per the following points from Section 7 and 10 of Government Notice No. 29 of 2012 of the Environmental Management Act:

- ◆ 7.1 “Construction of facilities for aquaculture production, including mariculture and algae farms where the structures are not situated within an aquaculture development zone declared in terms of the Aquaculture Act, 2002.” (installation of long lines for mariculture of oysters)
- ◆ 7.8 “The introduction of alien species into local ecosystems.” (Abalone (*H. midae*) and oysters (*C. gigas*) is non-native although both have been cultured in the water at Lüderitz for many years)
- ◆ 10.1 (e) “The construction of any structure below the high water mark of the sea.” (Installation of long lines)

## 7 ENVIRONMENTAL CHARACTERISTICS

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

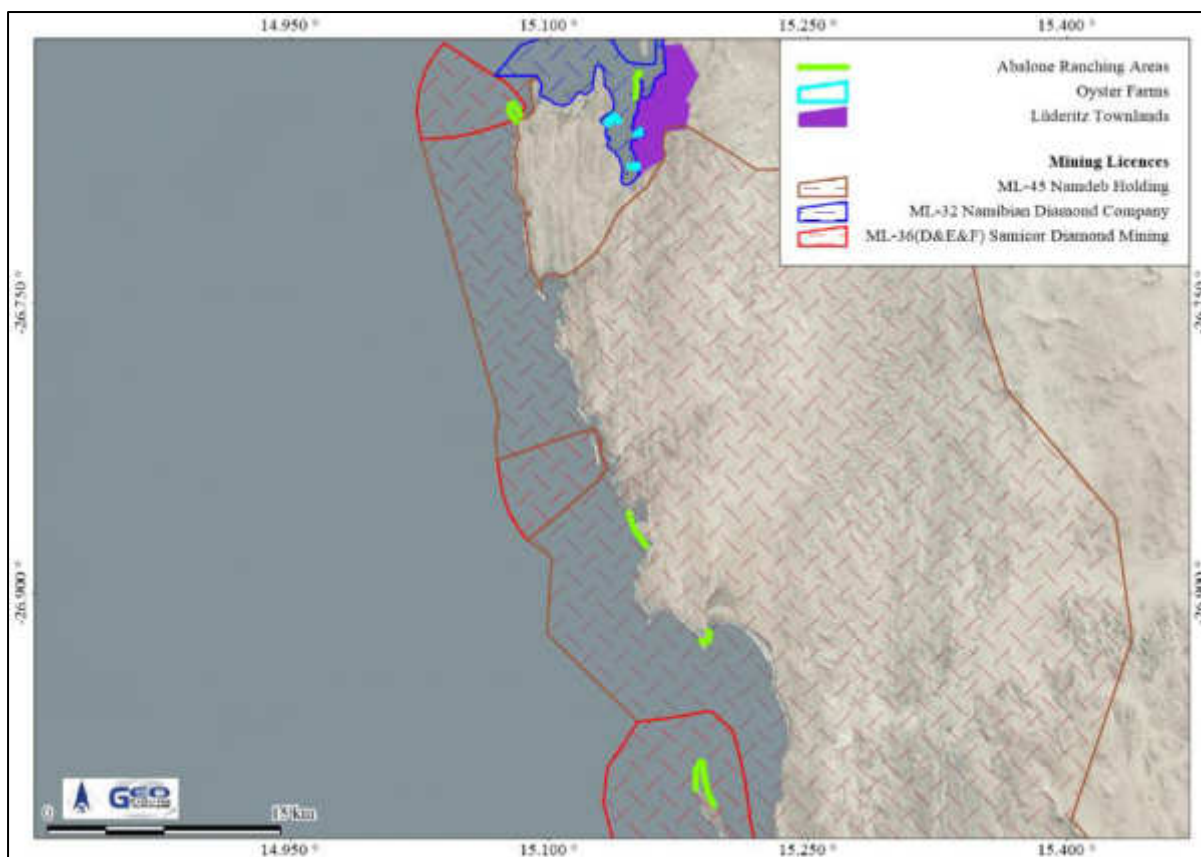
### 7.1 LOCALITY AND SURROUNDING LAND USE

The majority of the activities for abalone ranching and oyster farming will take place offshore. Offshore activities for abalone ranching take place below the high water mark and fall under the jurisdiction of the Ministry of Fisheries and Marine Resources. The oyster farm is located in Lüderitz Harbour within the Port of Lüderitz’s limits. Acclimation, processing, packaging and related tasks take place at the Proponent’s onshore facilities at the Lüderitz Boatyard, a part of Namport’s properties in the Lüderitz Townlands.

The offshore areas for abalone ranching and the areas immediately onshore from that fall within five mining licence (ML) areas, ML-45, ML-32, ML-36D, ML-36E and ML-36F (Figure 7-1). The mining licence holders are Sperrgebiet Diamond Mining (ML-45) and Samicor Diamond Mining (ML-36E) and Namdeb Holdings.

#### *Implications and Impacts*

The onshore facility is within townlands and the property belongs to Namport. The Proponent has utilised the facility for many years. Oyster mariculture activities have been ongoing within port limits and no significant additional impact is expected on port activities. For abalone ranching, the Proponent liaises with the respective mining / prospecting licence holders to ensure access.



**Figure 7-1. Townlands and mining licence areas**

## 7.2 CLIMATE

Lüderitz is located on the Namibian coastline in the arid Namib Desert. The arid conditions are as a result of dry descending air and upwelling of the cold Benguela Current. As a result, thick fog or low stratus clouds are a regular occurrence in Lüderitz. This is due to the influence of the Benguela Current and forms a major source of water for the flora in the Namib Desert.

Namibia is situated within an anti-cyclone belt of the southern hemisphere. Winds generated from the high-pressure cell over the Atlantic Ocean blow from a southerly direction when they reach the Namibian coastline. As the Namibian interior is warm (particularly in summer), localised low-pressure systems are created which draws the cold southerly winds towards the inland desert areas. These winds manifest themselves in the form of strong prevailing south to south-westerly winds, which 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 presents wind data of the Lüderitz airport. Although conditions over the ocean will be somewhat different, it does present a general idea of the expected wind conditions. 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. Such winds also tend to transport plenty of sand. Table 7-1 presents a summary of climate conditions in the Lüderitz area. Rainfall is typically limited with an average of less than 50 mm per annum. However, occasional cloud bursts do occur and this can result in rainfall of more than 100 mm in a short time.

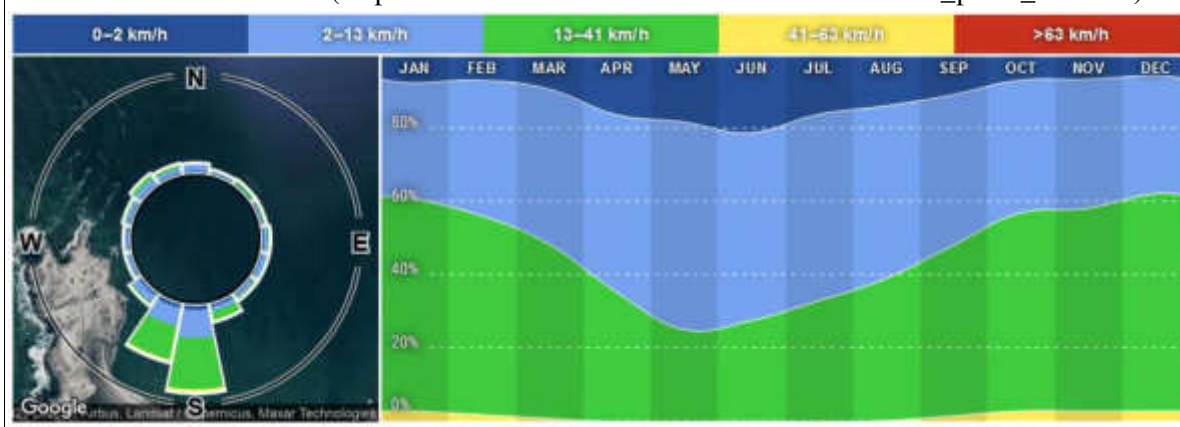
### ***Implications and Impacts***

Strong winds may lead to rough seas with safety risks for the crew of small watercraft and possible infrastructure damage when there are large swells. This will also present increased safety risks to divers.

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

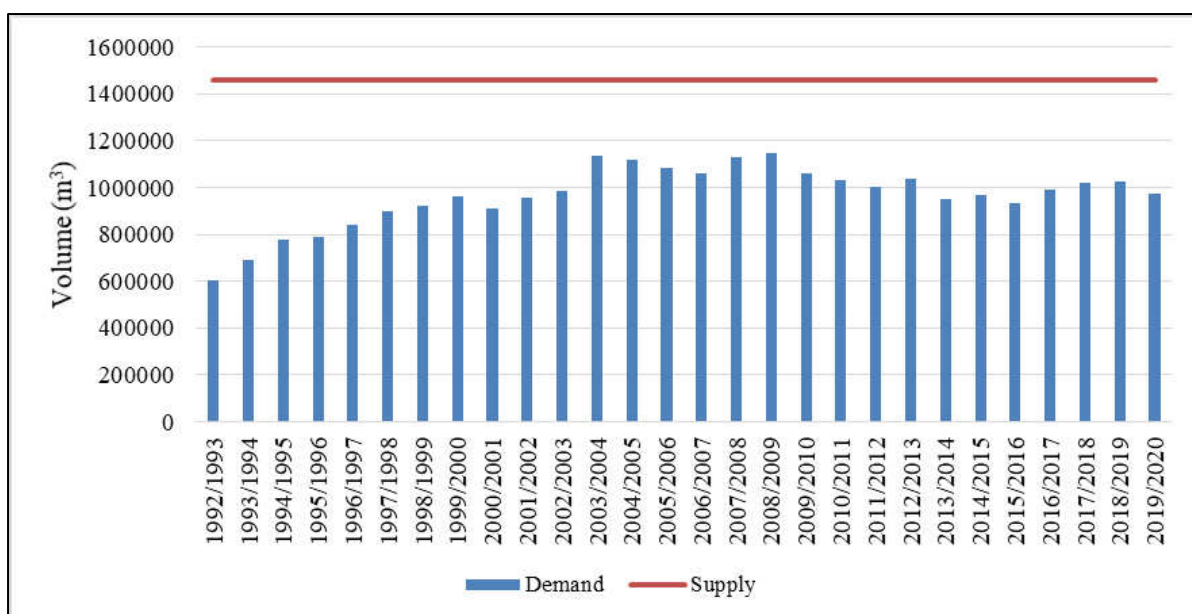
<b>Average annual rainfall (mm/a)</b>	0-50 mm; half of the rainfall occurs from May to June
<b>Variation in annual rainfall (%)</b>	80 – 90%
<b>Average annual evaporation (mm/a)</b>	2,400-2,600
<b>Water deficit (mm/a)</b>	1,701-1,900
<b>Temperature</b>	Average maximum: Between 24 °C in March/April and 19.3 °C in September Average minimum: Between 16.5 °C in February and 9.1 °C in August Average annual >16 °C
<b>Fog</b>	Approximately 126.7 days of fog per year
<b>Wind</b>	Prevailing wind strong south-westerly

Wind data for Diaz Point ([https://www.windfinder.com/windstatistics/diaz\\_point\\_luderitz](https://www.windfinder.com/windstatistics/diaz_point_luderitz))



### 7.3 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. During 2019/2020 the actual volume of water sold by NamWater was 975,170 m<sup>3</sup>. The potential supply of the scheme is 1,460,000 m<sup>3</sup>. Since 2019/2020, no additional industries have been developed which are major consumers of potable water and the potential supply is assumed to be very similar.



**Figure 7-2. Lüderitz potable water supply and demand statistics (Source: Pers. Comm. NamWater)**

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

The limited amount of water used by the Proponent for processing activities is not expected to have an impact on the public water supply. Disruptions in potable water supply to the processing plant may however impact on operational efficiency.

#### **7.4 ECOLOGY**

The terrestrial environment at Lüderitz and onshore of the mariculture areas are part of the Succulent Karoo Biome with a succulent steppe vegetation type and dwarf shrubland structure (Atlas of Namibia Project, 2002). Apart from the Lüderitz Townlands, the land area is part of the Tsau //Khaeb National Park (Figure 7-3). 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). All land-based activities of the Proponent will take place within Lüderitz's Townlands, which is located in the Lüderitz Peninsula vegetation zone, but due to the towns development this vegetation zone is highly degraded within the urban area. Brown hyena, jackal, springbok, porcupines and oryx are some of the large mammals that utilize the areas surrounding Lüderitz.

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. The Namibian coastline is characterised by the cold, northward flowing Benguela Current. Strong upwelling of cold, nutrient rich water along the Namibian coast is one of the key environmental characteristics of the Benguela Current. The magnitude of upwelling is strongly influenced by wind and it leads to high biological productivity supporting significant fish populations (O'Toole, 1997; Pulfrich, 2010). Lüderitz is reported to be situated within the most intense upwelling system (O'Toole, 1997; Pisces, 2003). An abundance of nutrients are brought from the sediments on the sea floor by this upwelling system to the photic zone. Large amounts of dead phyto- and zoo-plankton, which bloom as a result of this nutrient flux, settle on the seafloor together with silt, and contributes to anoxic conditions in the vicinity of Lüderitz and result in the occasional hydrogen sulphide eruption (Pulfrich, 2010; NSI, 2012).

The upwelling of nutrients results in a very productive ecosystem. This also includes the abundant growth of algae (micro- and macro- algae), the food source of molluscs. Species occurring around

Lüderitz like *Ecklonia maxima* and *Ulva* spp. have for example been shown to form an important part of *H. midae* diet (Barkai & Griffiths, 1986).

Islands and the rocky shorelines along the coast around Lüderitz act as important sanctuaries for various bird species and form part of the Important Bird Area (IBA) NA017, the Lüderitz Islands IBA. The IBA consist of the four islands; Halifax, Penguin, Seal and Flamingo Island, as well as the rocky shoreline of the mainland. The island support more than 10,000 birds while the rocky shorelines of the mainland support more than 14,000 shorebirds (BirdLife International 2021). 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. A number of species that are red listed occur along the coast. These include birds like the African penguin, bank cormorant, crowned cormorant, cape cormorant, African oyster catcher, Damara tern, lesser flamingo, Cape gannet, etc. They, and numerous other species, typically populate the islands forming the Namibian Islands Marine Protected Area (NIMPA) (Figure 7-3) such as North Long Island, South Long Island, Halifax, Ichaboe, Possession, Mercury, etc. On the islands most of the birds' numbers are declining despite the islands being protected and off-limits to the general public. Events such as the significant number of penguin deaths recorded in 2019 furthermore takes its toll on the species long term sustainability.

Some important species that are considered endangered, vulnerable or near threatened, and occurring within or near the project area, are presented in Table 7-2, with some notes on their status and threats (<https://www.iucnredlist.org/>; BirdLife International 2021).

Multiple cetaceans also occur along the Namibian coast. Cetaceans occurring in Lüderitz include species such as the Common Bottlenose Dolphins, the Namibian endemic Heaveside's Dolphins, Dusky Dolphins, Humpback Whales and Southern Right Whales as well as the Cape Fur Seals. This includes migratory, resident and semi-resident species.

**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

Common Name (Scientific Name)	Range	Status (Last Assessed)	Comments	Current Threats
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

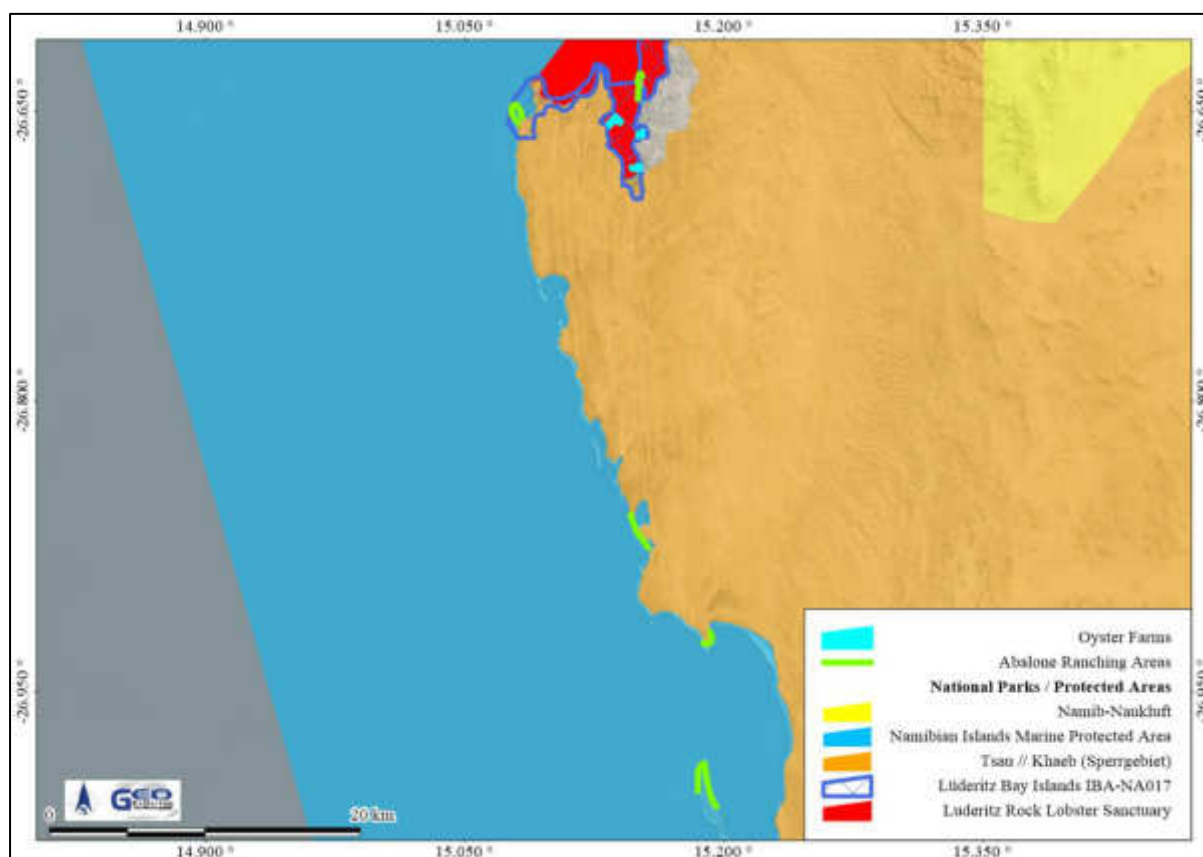


Figure 7-3. Protected areas

### 7.5 DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS

From 2001 to 2011, the //Karas Region showed a population increase of 1.1%. This is less than the Namibian intercensal growth rate of 1.4%. For the same period Lüderitz showed a decline in population size of 5.6% and had a population size of 12,537 in 2011 (Namibia Statistics Agency, 2011). The remoteness of Lüderitz and the lack of employment and economic diversification opportunities possibly contributes to this decline. This may lead to some inhabitants relocating to other urban centres offering better prospects. Lüderitz has an unemployment rate of 28.2%

which is slightly lower than the rate of 32.2% of the //Karas Region (Namibia Statistics Agency, 2011).

Lüderitz developed in the early 20<sup>th</sup> century mainly as a result of the diamond mining industry. Today however, the sustaining industries in Lüderitz are fishing and mariculture, mining and tourism. The majority of employment is provided by the fishing industry which mainly exports fisheries products to Europe. Rock lobsters are one of the key fisheries products. Mariculture of abalone and oysters are also actively pursued. Diamond mining used to be a major part of the mining industry with zinc mining being the other major component.

The Port of Lüderitz, as operated by Namport, is central to the fishing and mining industries. During the period April 2016 to March 2017 156,458 tons of zinc product and 15,070 tons of lead concentrate were exported via the Port of Lüderitz. 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 2016/2017 period 92,078 tons of sulphur was imported via the port. During 2019 the export of manganese ore via Lüderitz, originating from South Africa, was initiated. The anticipated export volumes are in the range of 80,000 to 90,000 tons per month in three separate shipments.

Tourism plays an important part in the local economy, unfortunately only a very small percentage of tourists visiting Namibia, also visits Lüderitz. Main attractions are Kolmanskop, Diaz Point and the historic buildings of the town. Passenger liners call in the Port of Lüderitz from time to time with approximately 35 calling in port between 2015 and 2018.

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

	Lüderitz	//Karas Region	Namibia
<b>Population (Males)</b>	6,300*	37,400	1,021,912
<b>Population (Females)</b>	6,200*	37,000	1,091,165
<b>Population (Total)</b>	12,500	74,400	2,113,077
<b>Unemployment (15+ years)</b>	N/A	32.9%	33.8%
<b>Literacy (15+ years)</b>	N/A	93.2%	87.7%
<b>Education at secondary level (15+ years)</b>	50%	55.2%	51.2%
<b>Households considered poor</b>	N/A	15.3%	19.5%

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

#### **Implications and Impacts**

The facility will provide employment to about 8 full time employees in the area, but this may increase as the project grows. Some skills development and training will benefit employees during the operational phase.

Sustained and increased employment opportunities will have a positive impact and result in an increase in revenue generation for Lüderitz as well as Namibia in general. The project therefore will have a positive contribution to demographic and economic aspects of Lüderitz as well as increased resilience in the industry and economy.

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

Lüderitz and surroundings has a rich history and the town has some of the oldest buildings in Namibia, many declared as National monuments. The proposed mariculture activities of the Proponent will not impact on any of the known archaeological and heritage sites in the town itself. However, along the coastline there are scattered artefacts of historical significance and there may be shipwrecks present in areas proposed for abalone resettlement.



***Implications and Impacts***

The project will not impact on any of the cultural or historically significant areas or buildings in Lüderitz. Scattered artefacts of importance is present along the coastline and shipwrecks, mainly fishing vessels, may be encountered during diving activities.

**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 09 and 16 March 2020. A site notice was placed at the Lüderitz Boatyard. Based on previous work performed in Lüderitz for the mariculture industry and various other projects, an extensive database of IAPs has been developed for projects in the town. Interested and affected parties were identified from this database and notified of the project. Among others, the Lüderitz Town Council, Ministry of Fisheries and Marine Resources, Namport, members of the mariculture industry, the Lüderitzbucht Foundation and various other stakeholders and potential IAPs were notified. See Appendix C for proof of the public participation processes. The only concerns received were related to entanglement for marine mammals with the long lines for oyster culturing. This is addressed in section 10.

**9 MAJOR IDENTIFIED IMPACTS**

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

**9.1 SOCIO-ECONOMIC IMPACTS**

Oceangrown Namibia will provide direct employment to about eight employees. The project activities contribute to employment and economic sustainability and development in Lüderitz. Some training and skills development will take place. True value addition and contribution to the Namibian economy are achieved by processing and packaging abalone and oysters in Lüderitz and then transporting the products to international markets. Since shellfish are generally high value products, their farming is an economically favourable venture. The draft Master Plan for Marine Aquaculture in Namibia (2012) of the Ministry of Fisheries and Marine Resources ([www.mfmr.gov.na](http://www.mfmr.gov.na)) promotes abalone mariculture and specifically also ranching. It states: “*The project [abalone ranching] has relatively low fixed capital requirements and extremely high margins and profitability once in full production. The project should therefore over time provide very high levels of returns that compensate for the initial high risk.*” The risk referred to is the relatively high mortality experienced when resettling abalone spat.

**9.2 HEALTH, SAFETY AND SECURITY IMPACTS**

Molluscs are filter feeders that often accumulate trace elements within their flesh and this may include heavy metals like cadmium and lead. They may also contain bacteria or can cause paralytic shellfish poisoning (PSP) and diarrhetic shellfish poisoning (DSP). Both types of poisoning result when shellfish consume certain toxic microalgae. Health effects are thus also possible to the consumers of molluscs.

Poaching of specifically abalone is possible and is a huge threat to naturally occurring abalone populations in South Africa. Should large scale abalone ranching be conducted in Namibian waters, the likelihood of poaching will increase. Rough seas and restricted diamond mining areas will however make poaching difficult.

### 9.3 WASTE PRODUCTION

Waste will mainly be produced in the form of abalone shells as well as effluent and biofouling produced during processing of abalone and oysters. Sewage, typical office related and domestic waste will be produced during land-based activities. Plastic waste in the form of old grow out baskets and string or similar products used to tie baskets to long lines may also be produced. No hazardous waste is expected to be produced during normal operations.

### 9.4 TRAFFIC IMPACTS

During operations some traffic impacts can be experienced when trucks and delivery vehicles collect and deliver products. The impact is however expected to be minimal.

### 9.5 SURFACE WATER CONTAMINATION

Surface water contamination can occur when pollutants enter the ocean (e.g. plastics) or through effluent discharge from the processing facility where abalone and oysters will be processed / handled.

### 9.6 IMPACTS ON MARINE AND COASTAL BIOTA

#### 9.6.1 Physical Impacts

Installation of long lines with anchors may cause temporary damage to the local habitat. However, being a dynamic ecosystem, recovery is expected to be rapid with no long lasting effects. Instead, the addition of anchors with ropes on the seabed may create additional habitat and a slight increase in the local biodiversity.

#### 9.6.2 Diseases and Parasites

Mariculture activities may lead to the introduction of non-target species into the environment. The occurrence of disease causing agents and parasites and pathogens in the juvenile abalone and oysters, and the spread thereof to the natural environment, may have negative impacts on the operations as well as the environment. The spread of diseases, parasites and pathogens are mostly related to the transfer thereof between the same species, although species such as sea urchins and bivalves (oysters, mussels) may also be affected (Bower, 1996; Bower, 2004; Bower et al. 1994). Diseases posing high economical risks to the operations, as well as potential environmental and health risks, include withering foot syndrome, *Vibrio* spp. infections, the oomycete *Haloticida noduliformans*, and sabellid polychaete infestations (Bower, 2017; Mouton, 2008). As abalone and oysters do not occur naturally in the Namibian coastal waters, abalone and oysters that are not carefully vetted and introduced into the environment may host these species, and introduce them to the new environment. Strict phytosanitary protocols are implemented by the Namibian government with respect to the import of any living organisms. All imported abalone and oysters will thus have to be accompanied by the necessary phytosanitary documents (health certificates) that certifies them as being disease and parasite free.

For oysters, high stocking densities in baskets increase the stress on the animals, thereby impacting their immune systems. This may lead to higher risk of disease outbreaks, therefore it is imperative to maintain stocking densities that are favourable for oyster health.

#### 9.6.3 Ecosystem and Biodiversity Impacts

Ranching of abalone may have potential impacts on the marine and coastal ecosystem. These risks are mainly related to habitat degradation as abalone introduced into the environment may compete with indigenous benthic species for space and food. However, *H. midae* is not considered an invasive species and with proper management of stocking densities, according to the environments' carrying capacity, and regular monitoring, this is not expected to pose any real risk. Furthermore, it has been shown that adult abalone mostly feed on drift kelp with 95-98% of their diet consisting thereof (Zeeman et al., 2012). Subadults prefer feeding on drift kelp, but when it is not available, they do graze on microalgae. The study by Zeeman et al. (2012) concluded "*Collectively, this evidence indicates that any ecosystem effects that*

*subadults and adults of H. midae have as grazers will be weak because they feed mainly by trapping drift material, and the frequency of grazing and the incidence of consumption of attached algae are low.”*

Experience has shown that *H. midae* is not able to reproduce along the west coast of southern Africa, outside of its natural habitat north of Cape Columbine (Massie et al., 2018; Hutchings et al., 2019). Should monitoring show that ranching is having a significant negative effect on the ecosystem, introduction of juveniles will be halted, and the system should in all likelihood, eventually return to baseline conditions after the life span of the last batch of introduced juvenile abalones has elapsed.

Oysters have been cultured for many years in Lüderitz Harbour. No obvious impact on the local ecosystem and biodiversity is visible and oysters have not been observed to reproduce and settle in the area.

Long lines and grow-out baskets create additional habitat and refuges for local species including juvenile lobsters and fish. This can be regarded as a positive impact.

#### **9.6.4 Entanglement**

Marine mammals such as dolphins and whales can get entangled in the long lines. The likelihood for this to occur is low since the long line systems are not a mesh type system and the oyster mariculture areas are located to the shallower southern end of Lüderitz Harbour.

## **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 project. 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:

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**

<b>Criteria</b>	<b>Score</b>
<b>Importance of condition (A1) – assessed against the 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 proposed project are minimised. An EMP is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigation measures might be included if necessary. The environmental management measures are provided in the tables and descriptions below. These management measures should be adhered to during the various phases of the operation of the development. This section of the report can act as a stand-alone document. All personnel taking part in project 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 activities of operations;
- ◆ 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 operational personnel.

Various potential and definite impacts will emanate from the project. 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 are expected to mostly be of medium to low significance and can mostly be mitigated to have a low significance.

### **10.1.1 Planning**

During the phases of planning for future operations and decommissioning of the project, it is the responsibility of the 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 project are in place and remains 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, by both the employees and contractors and their employees.
- ◆ 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;
  - Biosecurity protocol and disease management plan.
- ◆ Establish and / or maintain a reporting system to report on aspects of operations and decommissioning as outlined in the EMP.
- ◆ Submit monitoring reports every six months to allow for environmental clearance certificate renewal applications when needed.
- ◆ Update the EIA and EMP if required and apply for renewal of the environmental clearance certificate prior to expiry.

### 10.1.2 National Development Strategy: Investment in Mariculture

The mariculture project pins down key development goals which were identified as part of NDP5. It may be considered as a mariculture project which aims at generating income from foreign sectors by providing a very high value per resource (seawater / habitat). In addition, the project is located in line with the regional planning initiatives which identified the location as an area for mariculture development. The project is unique in being one of only a handful of such growing projects in Namibia and is considered a long term project.

In addition to NDP5, the focus on mariculture development has further been carried forward in the draft Master Plan for Marine Aquaculture in Namibia (2012). The project therefore is considered to be a positive contributor to achieving national development goals.

Project Activity/Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Planning	Project implementation in line with the NDP 5 and regional land use planning.	4	1	2	1	1	14	2	Definite
Daily Operations	Expansion of the mariculture sector in the //Karas Region Project implementation in line with the NDP5 and regional land use planning.	3	2	2	2	2	36	4	Definite
Indirect Impacts	Contribution of achieving the goals set out in Vision 2030 for Namibia	3	1	3	3	3	27	3	Definite

**Desired Outcome:** Continued contribution to the development of the //Karas Region as well as implementation of project activities in line with NDP5 and Vision 2030.

#### Actions

##### **Enhancement:**

- ◆ Liaison with regional and national governmental agencies through appropriate financial and social responsibility reporting.
- ◆ Infrastructure maintenance long lines, on-shore facility. Where possible, public and private partnership regarding projects should be considered.

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

- ◆ Proponent

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

- ◆ All project contributions towards regional development, inclusive of communications held with relevant authorities, to be kept on file.

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

During the operational phase, oyster and abalone will be exported to world markets generating revenue for Namibia and contributing to a positive trade balance. The successful implementation of the project, and related return on investment, will boost investors' confidence in Namibia. It will further contribute to Namibia's sustainable development of Vision 2030, the related development goals of NDP5 and the draft Master Plan for Marine Aquaculture in Namibia (2012). The project will contribute to stimulate growth and localised expenditure in the Region.

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

#### Actions

##### **Enhancement:**

- ◆ Maximise contribution to the Namibian economy by contribution to industry development and using Namibian suppliers. Adhere to all Namibian Labour Act requirements.

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

- ◆ Proponent

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

- ◆ Service providers' contracts or agreement or records to be kept.

#### 10.1.4 Employment and Remuneration

An increase in semi-skilled, skilled and professional labour will result from the mariculture activities. Successful implementation of the project is hinged on continued employment of labourers. Employees will be remunerated and this increases their economic stability which in turn increases their economic resilience.

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, contribution to national trade balance	3	2	2	2	2	36	4	Definite

**Desired outcome:** Reduced unemployment and poverty.

#### Actions

##### **Mitigation:**

- ◆ The proponent must employ local Namibians where possible. Deviations from this must be justified.
- ◆ If the skills exist locally, employees must first be sourced from the town, then the region and then nationally.

##### **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.



### 10.1.5 Skills, Technology and Development

Training will be provided to employees in order to perform various functions for successful implementation and execution of the project. Skills will be transferred to an unskilled workforce for general tasks. New technologies are often investigated and introduced into the industry, thus 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
Daily Operations	Technological development and transfer of skills	2	1	2	3	2	14	2	Definite

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

#### Actions

##### **Mitigation:**

- ◆ If the skills exist locally, contractors must first be sourced from the town, then the region and then nationally. Deviations from this practice must be justified.
- ◆ Training and skills development must be focussed on Namibians.
- ◆ Skills development and improvement programs to be made available as identified during performance assessments.
- ◆ Employees to be informed about parameters and requirements for references upon employment.

##### **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.
- ◆ Bi-annual report based on records kept.

### 10.1.6 Demographic Profile and Community Health

The project relies on labour during the operational phase. It is not foreseen that the project will create a change in the demographic profile of the local community, as employment will be sourced locally as far as possible. The community may still to some extent be exposed to factors such as communicable disease (e.g. HIV/AIDS) and alcoholism/drug abuse. This impacts on overall community health. Should an increase in foreign people (e.g. migrant workers) in the area take place, this may potentially increase the risk of criminal and socially/culturally deviant behaviour.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Daily Operations	Social ills in the local community	2	-1	1	2	2	-10	-2	Improbable

**Desired Outcome:** To prevent the spread of communicable diseases and prevent / discourage socially deviant behaviour.

#### Actions:

##### **Prevention:**

- ◆ Employ only local people from the area, deviations from this practice should be justified appropriately.
- ◆ Adhere to all municipal by-laws relating to environmental health, such as sanitation requirements.
- ◆ Provide educational, awareness information for employees on various topics of social behaviour such as alcohol abuse and HIV/AIDS.
- ◆ Disciplinary steps, within the legal parameters of Namibia, to be taken for socially deviant behaviour during working hours should be clearly stipulated in employment contracts.
- ◆ Adopt a policy wherein derogatory and discriminative talk towards any gender or race is punishable under employee contracts.

##### **Mitigation:**

- ◆ Educational programmes for employees on HIV/AIDS and general upliftment of employees' social status.
- ◆ Appointment of reputable contractors.
- ◆ Take disciplinary action against employees not adhering to contractual agreements with regard to socially deviant behaviour (e.g. alcohol or drug abuse during working hours).

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

- ◆ Proponent

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

- ◆ Municipal by-laws
- ◆ Bi-annual summary report based on employee demographics, educational programmes and training conducted.

### 10.1.7 Traffic

Transport requirements include the transport of equipment, of employees, and of abalone and oysters to various markets. This may cause a slight increase of traffic to and from the site and increase congestion and increase the risk of incidents and accidents in the town. Traffic on the road near schools are of specific concern where school children cross the road. Due to the scale and location of the proposed operations, these impacts are expected to be minimal.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Daily Operations	Increase traffic, road wear and tear and accidents	2	-1	2	2	1	-10	-2	Improbable

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

#### **Actions**

##### **Prevention:**

- ◆ All drivers must be properly trained with valid and required driver's licences.
- ◆ Erect clear signage regarding access and exit points at the processed product collection points.
- ◆ Proper route determination to avoid problem areas if required.
- ◆ Training and information sharing with drivers of vehicles to ensure vigilance at hot spots. This include the town centre, schools and areas with occasional animal crossings (e.g. brown hyena).

##### **Mitigation:**

- ◆ If any traffic impacts are expected, traffic management should be performed to prevent these.
- ◆ The placement of signs to warn and direct traffic where necessary will mitigate traffic impacts.

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

- ◆ Contractors
- ◆ Proponent

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

- ◆ Any complaints received regarding traffic issues 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 Health, Safety and Security

Activities associated with the mariculture projects relies on human labour and therefore exposes them to potential health and safety risks. The major risks involved with the proposed activities are drowning, hypothermia, decompression sickness, physical injury such as accidental cuts, vehicle accidents, etc. Security risks are related to unauthorized entry, theft (abalone and oysters) and sabotage. The quality of abalone and oysters is important as cases of PSP and DSP can be serious.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Daily Operations	Health effects, physical injuries and criminal activities	1	-2	3	3	2	-16	-2	Probable

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

#### **Actions**

##### **Prevention:**

At minimum the proponent must:

- ◆ Provide adequate training to employees or ensure competent employees and contractors are appointed. This include certified divers and licenced drivers.
- ◆ Where applicable, clearly label dangerous and restricted areas as well as dangerous equipment and products.
- ◆ Provide all employees with required and adequate personal protective equipment (PPE).
- ◆ All health and safety standards specified in the Labour Act should be complied with.
- ◆ Sampling as per the existing standard for mariculture industry in Namibia as performed by the Namibia Standards Institution.
- ◆ Develop a security protocol for transport of oysters and abalone which can include monitoring of vehicle movements (GPS tracking), emergency procedures, etc.
- ◆ Regularly patrol areas where abalone is resettled for poachers.

##### **Mitigation:**

- ◆ Selected personnel should be trained in first aid and a first aid kit must be available. The contact details of all emergency services must be readily available.
- ◆ Security procedures measures must be in place to protect workers.
- ◆ Report any suspicious activity that takes place offshore to the relevant authorities.

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

- ◆ Proponent

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

- ◆ Sampling as per the existing standard for mariculture industry in Namibia as performed by the Namibia Standards Institution.
- ◆ Monitoring and analysis reports on file.
- ◆ Any incidents must be recorded with action taken to prevent future occurrences.
- ◆ A bi-annual report should be compiled of all incidents reported and all monitoring/analysis results. The report should contain dates when training were conducted and when safety equipment and structures were inspected and maintained.

### 10.1.9 Noise

Noise generated from the operational activities will be minimal and isolated to for example pressure washing of baskets, water pumps and occasional trucks.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Daily Operations	Noise generated from the operational activities – nuisance	2	-1	2	2	2	-12	-2	Probable

**Desired Outcome:** To prevent any nuisance and hearing loss due to noise generated.

#### **Actions**

##### **Prevention:**

- ◆ Follow World Health Organization (WHO) guidelines on maximum noise levels (Guidelines for Community Noise, 1999) to prevent hearing impairment and noise levels for residential areas.
- ◆ All machinery must be regularly serviced to ensure minimal noise production.

##### **Mitigation:**

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

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

- ◆ Proponent

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

- ◆ WHO Guidelines.
- ◆ Maintain a complaints register.
- ◆ Bi-annual report on complaints and actions taken to address complaints and prevent future occurrences.

### 10.1.10 Waste Production

Minimal waste is expected from the project. Waste that will be generated will mainly include domestic waste, sewage, old baskets, shells and dead oysters and abalone, and biofouling when cleaning baskets and shells. Unconfined wastes / litter such as empty bags may be blown away by strong winds and end up in the surrounding environment.

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

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

#### Actions

##### **Prevention:**

- ◆ Waste reduction measures should be implemented and all waste that can be re-used / recycled must be kept separate.
- ◆ Beneficial use of shells is promoted e.g. as source of calcium carbonate, additive to feed, etc.
- ◆ Ensure adequate waste storage facilities are available where applicable.
- ◆ Ensure waste cannot be blown away by strong wind.
- ◆ Prevent scavenging (human and non-human) at waste storage.

##### **Mitigation:**

- ◆ Waste should be disposed of regularly and at appropriately classified disposal facilities, this includes hazardous materials (empty chemical containers, contaminated rugs, paper water and soil), if any.
- ◆ A contingency plan must be developed to handle any hazardous biological waste, for example disease-bearing organisms. This should include proper disposal methods to prevent spread of contamination or scavenging by animals or humans. Waste that present health or environmental impacts should be incinerated.
- ◆ Liaise with the municipality regarding waste and handling of hazardous waste (if any).

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

- ◆ Proponent

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

- ◆ A record should be kept of any disposal of hazardous waste.
- ◆ 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.

### 10.1.11 Terrestrial Ecosystem and Biodiversity Impact

Terrestrial impacts are limited as most activities occur offshore or at the Lüderitz Boatyard. Limited terrestrial impacts may be expected when boat launches are performed along the beach near the abalone ranching sites. This can include trampling of sensitive areas or bird breeding areas. Activity around islands may cause stress among bird populations like penguins.

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

**Desired Outcome:** To reduce disturbance and destruction of the ecological environment.

#### Actions.

##### **Prevention:**

- ◆ Reach an agreement with the Ministry of Fisheries and Marine Resources on areas that are restricted within the area earmarked for abalone ranching. This should include buffer zones and safety distances.
- ◆ Educate all workers on the value of biodiversity and promote vigilance while accessing rocky shores and beaches to avoid trampling any sensitive areas or bird nests.
- ◆ Keep a safe distance from rocky shores or islands where birds are nesting.

##### **Mitigation:**

- ◆ Workers to report any extraordinary ecological sightings (e.g. dead washed out fish or marine mammals, birds or other animals entangled in waste, oil covered birds, etc.) to the MEFT and/or Ministry of Fisheries and Marine Resources.
- ◆ Beach driving should be prevented where possible, and where required, should stick to existing tracks, if /where possible to reduce the ecological impact.
- ◆ Mitigation measures related to waste handling should limit ecosystem and biodiversity impacts.

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

- ◆ Proponent

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

- ◆ All monitoring information and extraordinary animal sightings to be included in a bi-annual report.

### 10.1.12 Impacts on Marine and Coastal Biota

Impacts in the marine environment include introduction of diseases, entanglement of large marine mammals in the long lines, abalone too densely resettled, temporary seabed disruption for anchor placement, physical pollution and injury of non-target species.

Abalone mainly feed on drift kelp and significant competition with other species for food is not expected. Density of abalone resettlement will be carefully determined according to available food resources and this will prevent benthic impacts. Although outside of its natural range, abalone has been ranched at Lüderitz for many years.

Grow-out baskets acts as refuges for many marine organisms which may have a positive influence on local diversity.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Daily Operations	Impact on marine biota. Loss of biodiversity	2	-2	2	3	2	-28	-3	Improbable

**Desired Outcome:** To minimise destruction, degradation and disturbance of the ecological environment and prevent the introduction of diseases.

#### Actions.

##### **Prevention:**

- ◆ Implement a biosecurity and disease management plan (Appendix A).
- ◆ This plan should continuously be improved and updated.
- ◆ All abalone are vetted prior to importation according to the requirements of Namibia and are certified disease and pathogen free.
- ◆ Benthic communities should be monitored to ensure no major changes in the local ecosystem and biodiversity takes place, including proliferation of abalone. At fixed reference areas within each abalone ranching area, photos should be taken every six months as record of the condition of the benthic ecosystem.
- ◆ Resettle abalone according to the availability of resources and restrict it to an upper limit of 5/m<sup>2</sup>.
- ◆ Non-target species in grow-out baskets of oysters must be returned to the water as soon as possible.
- ◆ Employees must be restricted from illegal harvesting of any marine resources.

##### **Mitigation:**

- ◆ Report any extraordinary sightings or occurrences to the MEFT and Ministry of Fisheries and Marine Resources.
- ◆ Ensure regular sampling of oysters and abalone according to the requirements of the Namibia Standards Institution (Appendix B).
- ◆ If changes in the benthic ecosystem that can be ascribed to the presence of abalone are detected, the ranching protocol must be adjusted. This may include reducing the number of individuals or excluding some areas altogether.
- ◆ Ensure stocking densities in oyster baskets are optimised to ensure a healthy, stress-free environment.
- ◆ Daily monitoring of long lines for any indications of entanglement of large marine mammals and corrective action to be taken.



**Data Sources and Monitoring:**

- ◆ Sampling as per the existing standard for mariculture industry in Namibia as performed by the Namibia Standards Institution.
- ◆ Regular environmental monitoring (diving) to monitor benthic rocky shore ecosystems for changes.
- ◆ Monitoring for entanglements with inspection sheets.
- ◆ Monitoring and analysis reports on file.
- ◆ All information and reporting to be included in a bi-annual summary report.

### 10.1.13 Surface Water Contamination

Spillages or illegal dumping of waste that may lead to surface water (ocean) contamination. Seawater abstraction and return from the onshore facility require an abstraction and effluent disposal permit from the Department of Water Affairs.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Daily Operations	Seawater pollution	2	-1	2	2	2	-12	-2	Probable

**Desired Outcome:** To prevent the contamination of seawater.

#### Actions

##### **Prevention:**

- ◆ All forms of waste must be prevented from entering the ocean and environment and must be discarded at appropriately classified disposal facilities, this includes the correct disposal of hazardous waste.
- ◆ Regularly service any motorised craft to prevent any oil or fuel from entering the water.
- ◆ Seawater return streams must comply with effluent disposal permit conditions.

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

- ◆ Proponent

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

- ◆ Ministry of Agriculture, Water and Land Reform water abstraction and effluent permit conditions.
- ◆ A report should be compiled bi-annually of all pollution incidents and corrective action taken, inclusive of water quality monitoring if so required by the various permitting conditions.

#### 10.1.14 Visual Impact

Poorly maintained infrastructure will have a negative visual impact. However, for oyster mariculture, the offshore infrastructure (buoys on long lines) has become part of the seascape character and is of interest to tourists. This may thus have a positive visual impact. The onshore facilities are earmarked for harbour use and is thus of an industrial nature.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Daily Operations	Aesthetic appearance	2	-1	2	2	1	-10	-2	Probable

**Desired Outcome:** To enhance aesthetically pleasing attributes of the existing seascape character.

#### Actions

##### **Enhancement:**

- 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.

##### **Mitigation:**

- Any damage to structures or decommissioned elements (e.g. long lines) should be removed from site.

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

- Proponent

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

- A bi-annual report should be compiled of all complaints received and actions taken.

### 10.1.15 Cumulative Impact

Possible cumulative impacts associated with the operational phase include slightly increased traffic in the area. The cumulative visual impact is related to the buoys at sea. Employment is a positive cumulative impact. Cumulative impacts on seawater quality arise from mariculture activities, fish processing and port operations.

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

**Desired Outcome:** To minimise negative and enhance positive cumulative impacts associated with the operations.

#### Actions

##### **Mitigation:**

- ◆ Addressing each of the individual impacts as discussed and recommended in the EMP would reduce the cumulative impact.
- ◆ Reviewing biannual 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.
- ◆ Should a reduction in seawater quality be expected, it is recommended that all industries in the area utilising seawater and discharging effluent into the ocean implement a joint monitoring program to ensure the localized water quality does not decrease.

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

- ◆ Proponent

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

- ◆ Bi-annual reports provides a summary of the impacts of the operational phase and highlights cumulative impacts.

## 10.2 DECOMMISSIONING AND REHABILITATION

Decommissioning is not foreseen during the validity of the environmental clearance certificate. Decommissioning was however assessed. Should decommissioning occur at any stage, all offshore infrastructure must be removed as any remnants of long lines and anchors may impact on seafaring traffic and dredging of the ocean floor. . During the last abalone collection outings no new abalone will be resettled. It is unlikely that all abalone will be collected, but due to abalone's inability to proliferate in the area, they will eventually be predated or die-off. The environmental management plan 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 may subscribe to an environmental management system that 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 Environmental Management Plan.

## 11 CONCLUSION

The proposed mariculture activities will have a positive impact on Lüderitz and Namibia as a whole by creating much needed employment opportunities and revenue generation, see Table 11-1. In addition to employment and revenue generation, the project will contribute locally to the transfer of skills and training which in turn develops the local workforce.

Negative impacts can successfully be mitigated. The implementation of a biosecurity protocol and disease management plan should mitigate the potential risk of pathogens and parasites. This mainly involves vetting of oysters and abalone as disease free as part of the import permitting process. Oysters and abalone should be sampled and analysed regularly to ensure the quality is maintained. Any waste produced must be disposed of at an appropriate facility or re-used or recycled where possible. Hazardous waste, if any, must be disposed of at an approved hazardous waste disposal site. A detailed contingency plan is required to make provision for the safe disposal of abalone that requires discarding, especially during the events of a disease outbreak.

No significant impact is expected on local communities if overstocking of the benthic environment with abalone is prevented. Stocking density must not exceed 5/m<sup>2</sup>. Abalone being drift kelp feeders reduces competition with other species for food. Due to the specific requirements of abalone to reproduce, they are not expected to become invasive. This is also evident after more than two decades of abalone ranching in the Lüderitz area. Careful monitoring of the marine environment is however still recommended and corrective action should be taken if ecosystem changes are detected.

The EMP should be used as an on-site reference document for all the operational activities. Parties responsible for transgression of the EMP should be held responsible for any rehabilitation that may need to be undertaken. Oceangrown Namibia should use and in-house health, safety and environment plan and related policies and standards in conjunction with the EMP. It is imperative that all construction

and operational personnel are taught the contents of these documents to ensure better environmental practises all round.

Should the Directorate of Environmental Affairs (DEA) find that the impacts and related mitigation measures, which have been proposed in this report, are acceptable, an environmental clearance certificate may be granted to the Proponent. The environmental clearance certificate issued, based on this document, will render it a legally binding document which should be adhered to. Focus should be placed on Section 10, which includes an EMP for this project. It should be noted that the assessment process's aim is not to stop the activity, or any of its components, but to rather determine its impact and guide sustainable and responsible development as per the spirit of the EMA.

**Table 11-1. Impact summary class values**

Impact Category	Impact Type	Operations
	<i>Positive Rating Scale: Maximum Value</i>	5
	<i>Negative Rating Scale: Maximum Value</i>	-5
EO	National Development Strategy: Investment in Mariculture	4
EO	Contribution to the National Economy	4
EO	Skills, Technology and Development	3
EO	Employment and Remuneration	3
SC	Demographic Profile and Community Health	-2
SC	Traffic	-2
SC	Health, Safety and Security	-2
PC	Noise	-1
PC	Waste Production	-2
BE	Terrestrial Ecosystem and Biodiversity Impact	-2
BE	Impacts on Marine Ecology	-3
PC	Surface Water Contamination	-2
SC	Visual Impact	-2
	Cumulative Impact	-3

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

## 12 REFERENCES

- Atlas of Namibia Project. 2002. Directorate of Environmental Affairs, Ministry of Environment and Tourism (www.met.gov.na). [Accessed from [http://www.uni-koeln.de/sfb389/e/e1/download/atlas\\_namibia/index\\_e.htm](http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/index_e.htm)
- Barkai R, Griffiths CL. 1986. Diet of the South African abalone *Haliotis midae*, South African Journal of Marine Science, 4:1, 37-44.
- BirdLife International. 2017. Important Bird Areas factsheet: Lüderitz Bay islands. Downloaded from <http://www.birdlife.org> on 10/07/2017.
- CEPF. 2005. Succulent Karoo Hotspot Briefing Book. Cape Town.
- Directorate of Environmental Affairs, 2008. Procedures and Guidelines for Environmental Impact Assessment (EIA) and Environmental Management Plans (EMP), Directorate of Environmental Affairs, Ministry of Environment and Tourism, Windhoek.
- Esterhuizen A. 2019. Introduction of the Peruvian Scallop, *Argopecten purpuratus* in Lüderitz Bay for Commercial Grow-out Purposes: Possible Physical and Biological Effects on the Marine Environment. (Unpublished)
- <http://mesonet.agron.iastate.edu/> accessed 4 May 2017
- <https://mfmr.gov.na/documents/411764/436209/Aquaculture+Master+Plan+Namibia+Part+1+Marine+Section+1.pdf/fa9e6c7c-ce51-6dc4-d482-6be4e7fe4359?version=1.0&previewFileIndex=1> accessed 21 November 2021
- <https://pmg.org.za/committee-meeting/30478/> accessed 18 July 2021
- <https://www.iucnredlist.org>
- [https://www.windfinder.com/windstatistics/diaz\\_point\\_luderitz](https://www.windfinder.com/windstatistics/diaz_point_luderitz) accessed 23 Nov 2021
- Kolberg, H, 2015. Namibia's Important Bird and Biodiversity Areas 1: Introduction and Overview. *Lanioturdus* 48(2). <https://www.researchgate.net/publication/279867071>
- Massie V, Hutchings K and Clark B, 2018. Proposed Abalone Holding and Processing Facility for Port Nolloth Sea Farms Ranching (Pty) Ltd Kleinzee, Northern Cape – Draft Basic Assessment Report. Supporting documentation for the Basic Assessment process conducted in terms of the National Environmental Management Act (No. 107 of 1998). October 2018.
- Namibia Statistics Agency. Namibia 2011 Population and Housing Census Main Report.
- Namibia Statistics Agency. Namibia Household Income and Expenditure Survey 2009/2010.
- NSI. 2012 Sanitary Survey Report for the Namibian Shellfish Sanitation Monitoring Programme
- O'Toole MJ. 1997. Marine Environmental Threats in Namibia. Research Discussion Paper No. 23, Directorate of Environmental Affairs, Ministry of Environment and Tourism, Namibia.
- Pastakia, C.M.R.; 1998; The Rapid Impact Assessment Matrix (RIAM) – A new tool for Environmental Impact Assessment.
- Pulfrich A. 2010. Elizabeth Bay Optimisation Study - Amendment to the Environmental Impact Assessment and Environmental Management Plan for the Elizabeth Bay Mine Extension Project.

Pulfrich, A. 2010. Marine Specialist Study for the Feasibility Assessment for the Proposed Expansion of the Port of Lüderitz.

Republic of South Africa Government Gazette No. 44636,  
[https://www.gov.za/sites/default/files/gcis\\_document/202106/44636gon466.pdf](https://www.gov.za/sites/default/files/gcis_document/202106/44636gon466.pdf) accessed 18 July 2021

Visser-Roux, A. 2011. Reproduction of the South African abalone, *Haliotis midae*. Ph.D. Thesis, University of Stellenbosch.

Wood AD. 1993. Aspects of the Biology and Ecology of the South African Abalone *Haliotis midae* Linnaeus, 1758 (Mollusca: Gastropoda) along the Eastern Cape and Ciskei Coast. M.Sc. Thesis, Rhodes University.

Zeeman Z, Branch G, Peschak TP, Pillay D. 2012. Assessing the ecosystem effects of the abalone *Haliotis midae* from its diet and foraging behaviour. African Journal of Marine Science - AFR J MAR SCI. 34. 1-10. 10.2989/1814232X.2012.675119.



**Appendix A: Draft Biosecurity and Disease Management Guidelines**



## BIOSECURITY AND DISEASE MANAGEMENT GUIDELINES

### **ANIMALS**

**Objective:** to minimise the risk of Pathogen (disease and parasite) introduction and spread by stock (e.g. spat, juvenile abalone and oysters and broodstock) and animal movement. New stock introduced to onshore facilities or ranching areas present the most significant risk for introducing pathogens, especially if the health status of the stock is unknown. Introductions and movements should be managed carefully to minimise the risk of introducing and spreading pathogens.

Onshore	Offshore
<ul style="list-style-type: none"> <li>◆ All new stock is vetted and certified pathogen free and healthy as part of the import requirements of Namibia.</li> <li>◆ All animals are inspected when received.</li> <li>◆ Mortalities or unwanted stock are incinerated. No dead or unwanted stock is returned to the environment or accessible to scavengers (e.g. birds).</li> <li>◆ Animals with health problems (suspected diseases) are investigated with assistance from aquatic animal health professionals.</li> <li>◆ All temporary holding tanks are regularly cleaned.</li> <li>◆ Animal stress is kept to a minimum by maintaining good water quality in temporary holding tanks, good hygiene, optimum stocking density and minimum handling of animals.</li> <li>◆ Quarantine tanks are isolated and the water does not form part of the normal return water to the ocean. If a disease is present, such water must first be sterilized before being returned to the ocean.</li> <li>◆ Domestic animals (e.g. cats and dogs) do not have access to onshore facilities at any time.</li> <li>◆ Vermin baiting occurs as necessary (i.e. if live rodents, droppings or nests are observed).</li> </ul>	<p><b>Abalone</b></p> <ul style="list-style-type: none"> <li>◆ Potential ranching habitats are inspected and classified according to potential stocking density.</li> <li>◆ Resettlement of abalone is performed according to each habitat's stocking density and then carefully monitored. Stocking densities of habitats are adjusted based on monitoring, if required.</li> </ul> <p><b>Oysters</b></p> <ul style="list-style-type: none"> <li>◆ Stock stress is kept to a minimum by ensuring optimum stocking density of grow-out baskets, regular resizing and transfer to bigger baskets as well as regular cleaning of baskets.</li> <li>◆ Escapees are prevented by ensuring all baskets are adequately secured to longlines and regularly maintained or replaced when damaged.</li> </ul> <p><b>General</b></p> <ul style="list-style-type: none"> <li>◆ Staff are trained in, and aware of, their role and responsibility in reporting signs of disease, parasites and high mortality.</li> <li>◆ Sampling and testing is performed according to the Molluscan Shellfish Sampling Schedule</li> <li>◆ Relevant authorities are informed of any significant, unexplained mortality event or suspected reportable disease immediately and the necessary tests conducted to determine the presence of disease. The authorities and mariculture industry must, if a disease is identified, develop and action plan to monitor the extent of infection and the procedures for elimination of the disease.</li> </ul>

### **PEOPLE**

**Objective:** to minimise the risk of pathogen introduction and spread through the movement of people. The risk of people introducing pathogens is greatest if other farms, or environments potentially containing diseases of concern, have recently been visited. Contaminated skin, clothing and footwear can all potentially spread disease.

Onshore	Offshore
<ul style="list-style-type: none"> <li>◆ Farm entry requirements are clearly displayed to visitors at the sign-in point.</li> <li>◆ Access for visitors must be approved by the farm manager.</li> <li>◆ Visitors must sign-in on arrival (by completing the farm visitor log) and undergo a farm biosecurity induction.</li> <li>◆ Footbaths (or the ability to change into zone specific boots) and hand sanitation stations are located at the processing facility entrance/exit so as to provide for effective disinfection at all times.</li> <li>◆ Staff/visitors who visit other aquaculture sites or seafood processors prior to facility entry go through a thorough disinfection process and wear clean overalls and PPE.</li> <li>◆ Boots worn in onshore facilities are not worn or taken outside the specific area to which they are designated.</li> <li>◆ Staff attend work in laundered, clean clothes each day.</li> <li>◆ Only designated staff are permitted to routinely enter quarantine areas.</li> <li>◆ Visitor access to quarantine zones is restricted.</li> <li>◆ Routine maintenance work required within quarantine area/s is, where possible, conducted by contractors between batches and prior to final disinfection.</li> <li>◆ Visitors are at all times accompanied when on site.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Staff goes through a disinfection process prior to going out on sea to dive for abalone resettlement, harvesting or monitoring.</li> </ul>

### **EQUIPMENT, VEHICLES AND VESSELS**

**Objective:** to minimise the risk of pathogen introduction and spread by equipment, vehicle or vessel movement. Depending on the history of use, contaminated equipment, vehicles or vessels can carry and spread pathogens.

Onshore	Offshore
<ul style="list-style-type: none"> <li>◆ All surfaces, tanks, containers where disease carrying organisms, or those suspected of carrying disease, were kept or handled, are disinfected immediately once the oysters and abalone are removed.</li> <li>◆ Equipment used in the quarantine area are not removed and used elsewhere in the processing facility.</li> <li>◆ All areas are regularly cleaned and kept free of rubbish and clutter.</li> <li>◆ Contractor tools are cleaned before entry and free of dust/organic matter.</li> </ul>	<ul style="list-style-type: none"> <li>◆ All equipment that will be used for resettlement, harvesting or monitoring purposes are disinfected prior to being loaded onto the vessel</li> <li>◆ Any containers which held diseased or potentially diseased animals are returned to shore for adequate cleaning and disinfection.</li> <li>◆ Seagoing vessels that transported any diseased or potentially diseased animals are disinfected immediately upon removal of such animals.</li> <li>◆ Seagoing vessels that may potentially be contaminated by disease causing organism may not go near any other mariculture areas before being cleaned and disinfected.</li> </ul>

## **RECORD KEEPING**

**Objective:** to record information necessary to support good biosecurity practices, in accordance with the biosecurity plan.

Good record keeping is necessary for farm biosecurity plan auditing and to provide demonstrable proof that biosecurity protocols are being followed. In the event of a disease outbreak records are used to trace the potential source of disease, identify breakdowns in adherence to biosecurity protocols and aid in the review and improvement of practices and protocols.

The minimum information that should be recorded is outlined below.

### **Stock Movements**

**Objective:** Detailed stock records, regarding stock movements and inventory, are maintained and readily accessible. Records of stock movements and inventory are essential for forward and backward tracing activities in the event of a disease outbreak.

Suggested minimum details include:

- ◆ Source of stock, including original and most recent source (if different).
- ◆ Movement of stock within (for movement between different zones e.g. acclimation tanks, long line or ranching areas).
- ◆ Movement of stock to other farms or to processors.

Records for each movement should include the following at a minimum:

- ◆ Date of movement
- ◆ Batch or other identifier
- ◆ Number of individuals
- ◆ Buyer (for sales) or stock origin, including contact details

### **Stock Health, Mortality and Water Quality Records**

**Objective:** Detailed stock health, mortality and quality records are maintained and readily accessible. Health and performance records provide evidence that regular stock monitoring is occurring. Records, especially of mortalities, assist monitoring for unusual health problems. For ranching, mortality monitoring may be difficult as animals do move around. The presence of shells is an indication of mortality.

Suggested minimum details include:

- ◆ Mortalities (quantities, including the method of disposal and if any samples have been archived)
- ◆ Details of any poorly performing oysters and abalone
- ◆ Results of laboratory testing - associated with clinical disease or undertaken for the purpose of health certification.

## **REFERENCES**

Matthews, E., Roberts, S., Deveney, M., Bradley, T., Dang, C., Wronski, E., Walker, M., Savva, N. and Zippel, B., PIRSA Fisheries & Aquaculture, 2017, Development of sector-specific biosecurity plan templates and guidance documents, Adelaide, November.



**Appendix B: Molluscan Shellfish Sampling Schedule**





MOLLUSCAN SHELLFISH SAMPLING SCHEDULE: FY 2021 to 2022 (April 2021 to March 2022)												
	Jan	Feb	Mar	April	May	June	July	August	Sept	Oct	Nov	Dec
Sun								1				
Mon								2			1	
Tues		1	1			1		3			2	
Wed		2	2			2		4	1		3	1
Thurs		3	3	1		3	1	5	2		4	2
Fri		4	4	<del>2</del>		4	2	6	3	1	5	3
Sat	1	5	5	3	1	5	3	7	4	2	6	4
Sun	2	6	6	4	2	6	4	8	5	3	7	5
Mon	3	7	7	<del>5</del>	3	7	5	9	6	4	8	6
Tues	4	8	8	6	<del>4</del>	8	6	10	7	5	9	7
Wed	5	9	9	7	5	9	7	11	8	6	10	8
Thurs	6	10	10	8	6	10	8	12	9	7	11	9
Fri	7	11	11	9	7	11	9	13	10	8	12	<del>10</del>
Sat	8	12	12	10	8	12	10	14	11	9	13	11
Sun	9	13	13	11	9	13	11	15	12	10	14	12
Mon	10	14	14	12	10	***14	12	16	13	11	15	13
Tues	11	15	15	13	11	15	13	17	14	12	16	14
Wed	12	16	16	14	12	16	14	18	15	13	17	15
Thurs	13	17	17	15	<del>13</del>	17	15	19	16	14	18	16
Fri	14	18	18	16	14	18	16	20	17	15	19	17
Sat	15	19	19	17	15	19	17	21	18	16	20	18
Sun	16	20	20	18	16	20	18	22	19	17	21	19
Mon	17	21	<del>21</del>	19	17	21	19	23	20	18	22	20
Tues	18	22	22	20	18	22	20	24	21	19	23	21
Wed	19	23	23	21	19	23	21	25	22	20	24	22
Thurs	20	24	24	22	20	24	22	<del>26</del>	23	21	25	23
Fri	21	25	25	23	21	25	23	27	24	22	26	24
Sat	22	26	26	24	22	26	24	28	25	23	27	25
Sun	23	27	27	25	23	27	25	29	26	24	28	26
Mon	24	28	28	26	**24	28	26	30	27	25	29	27
Tues	25	29	29	27	<del>25</del>	29	27	31	28	26	30	28
Wed	26	30	30	28	26	30	28		29	27		29
Thurs	27		31	29	27		29		30	28		30
Fri	28			30	28		30			29		31
Sat	29				29		31			30		
Sun	30				30					31		
Mon	31				31							

LIP, PST, MICRO	Cd, LIP, PST	LIP, PST	AST, LIP, PST, MICRO	HM, LIP, PST	DP, PST, PAH, PCBs, RAD
-----------------	--------------	----------	----------------------	--------------	-------------------------

**ACRONYMS:**  
 HM = Heavy Metals (Arsenic, Cadmium, Lead, Mercury);  
 AST = Amnesic shellfish toxin;  
 Cd = Cadmium; PAH = Polycyclic aromatic hydrocarbon;  
 RAD = Radionuclides; LIP = Lipophilic toxins (DSP toxins);  
 MICRO = (Microorganisms = E. coli, Salmonella, vibrio);  
 PST = Paralytic shellfish toxin; PCBs = Polychlorinated biphenyls

**Vibrio Testing is for screening purposes only for MFMR to determine prevalence. To be tested montly basis**

<b>ABALONE:</b>	1. PST - To be sampled every two weeks (see Sampling Schedule 2021/22 Review Report)
	2. AST and LIP - To be sampled based on phytoplankton alert by MFMR (see Sampling Schedule 2021/22 Review Report)

NOTE: (\*\*\*) Sampling and request for testing on 24/05/2021 shall include Cadmium Testing  
 (\*\*\*\*) Sampling and request for testing on 14/06/2021 shall include Arsenic

NOTE: (X) PAH, PCBs & RAD testing Done for 2021 in FY2020/2021

Compiled by: Tobias Kuugongelwa  
 Updated on 30 July 2021  
 Approved by: Dr Heidi Skrypzeck  
 30/07/2021  
 P.O. Box 90, SWANEBURG, AQUACULTURE



**Appendix C: Public Consultation**



**Notified IAPs**

<b>Name</b>	<b>Organisation</b>
Anja Kreiner	Ministry of Fisheries and Marine Resources
C Kamupingene	Namport
Cherilee Fortuin	Namdeb
Chief Executive Officer	Lüderitz Town Council
Christaline Kaangundue	Lüderitz Town Council
Crispin Clay	Lüderitzbucht Foundation
David C Dennis	Ludertiz Town Council
Elzevir Gelderbloem	NamPort
Erich Maletzky	Ministry of Fisheries and Marine Resources
F Druker	Coastways Tours Luderitz Pty Ltd.
Ferdie de Villiers	Novaship / Port Users Association
Foibe Nghoongoloka	Ministry of Fisheries & Marine Resources
Frikkie Botes	Ministry of Fisheries and Marine Resources
Gerd Kessler	Lagoon Aquaculture
H. Ludwicht	Office of the President
Heinz Manns	Namib Offroad Excursions
Hon. Rev. Jan A. Scholtz	Chairman and Councillor/ Karas Regional Council
Howard Head	CEO Ghost Town Tours Member Luderitz Tourism Member Ocean Grown ( Oysters)
I.N. Tjipura	Lüderitz Town Council
Ingrid Wiesel	Brown Hyena Research Project
J. Wiese	Seaflower
Jean Paul Roux	Ministry of Fisheries and Marine Resources
Jessica Kemper	Conservation Biologist and Lüderitz Resident
Johannes Isaaks	Namport
Joyce Katjirua	Namdeb
Jürgen Fleidl	Five Roses Aquaculture
Kolette Grobler	Ministry of Fisheries and Marine Resources
Koos Blaauw	Tetelestai Mariculture
La Toya Shivute	Ministry of Fisheries and Marine Resources
Manu Namukomba	NovaNam
Marion Schelkle	Ludertiz Safaris & Tours
Max Cooper	Namport
Michael Mackenzie	Novanam
Michael Viljoen	Hangana Seafood / Hangana Abalone
Ms Thandiwe Gxaba	Benguela Current Commission
Nicolaas De Wee	Health, Water & Sewer Services
Patricia Kaulinge	NovaNam
Pinehas N. Auene	Ministry of Works and Transport

Name	Organisation
Rassie Erasmus	Benguella Wealth Farming
Reginald Hercules	Community Member
Rian Jones	Fisheries
Rodney Braby	Marine Spatial Management and Governance Project - MARISMA
Rudi Cloete	Ministry of Fisheries and Marine Resources
Simon Elwen	Namibia Dolphin Project
Stefanus Gariseb	Namport
Suzan Ndjaleka	COSDEC
Tim Eiman	NamPort
Ulf Grünwald	Lüderitz Nest Hotel
Victor Libuku	Ministry of Fisheries and Marine Resources
Wayne Handley	Ministry of Environment, Forestry and Tourism
Wetupa Nakathingo	Lüderitz Town Council
	Seafo (South East Atlantic Fisheries Organisation)

## Ministry of Fisheries and Marine Resources Notification



TEL.: (+264-61) 257411 ♦ FAX.: (+264) 88626368  
 CELL.: (+264-81) 1220082  
 PO BOX 11073 ♦ WINDHOEK ♦ NAMIBIA  
 E-MAIL: gpt@thenamib.com

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

03 March 2020

Re: Environmental Scoping Assessment and Environmental Management Plan for  
 Oceangrown Namibia's Mariculture Activities at Lüderitz

Dear Sir

Geo Pollution Technologies (Pty) Ltd was appointed to undertake an environmental assessment for mariculture activities of Oceangrown Namibia CC at Lüderitz. The assessment will be conducted according to the Environmental Management Act of 2007 and its regulations as published in 2012.

**Project:** Environmental Scoping Assessment and Environmental Management Plan for Oceangrown's Mariculture Activities at Lüderitz

**Proponents:** Oceangrown Namibia CC

**Environmental Assessment Practitioner:** Geo Pollution Technologies (Pty) Ltd

The ocean water at Lüderitz is ideal for mariculture activities and as such, the local culturing of oysters, abalone and mussels have been ongoing for many years. The Proponent has an existing mariculture license to grow Pacific oysters (*Crassostrea gigas*), Peruvian scallops (*Argopecten purpuratus*), black mussels (*Mytilus Galloprovincialis*) in Mariculture Areas 7, 14, 17 and 20, Lüderitz Harbour. The licence also includes ranching of abalone (*Haliotis midae*) at selected offshore locations south of Lüderitz. Oceangrown is currently not operational and their processing plant in the Lüderitz boatyard is temporarily closed.

Operational activities will be conducted offshore and onshore. Offshore, floating long lines are either populated with: 1) baskets containing oyster and scallop spat; or 2) ropes acting as substrate for attachment of mussels. Abalone spat is resettled in the selected areas by divers. Culturing is staggered to ensure that marketable sized oysters, scallops, mussels and abalone can be harvested continuously. Oysters, scallops and mussels are collected while abalone is retrieved by divers using a small boat. Collected shellfish is returned to the onshore processing plant for cleaning and sizing. Undersized oysters, scallops and mussels are returned to the ocean in newly populated baskets, while larger ones are processed and packaged for shipment. Spat will be obtained from Beira Aquaculture in Swakopmund or from approved international markets.

The Ministry of Fisheries and Marine Resources is invited to register with the environmental consultant to receive further documentation and communication regarding the project. By registering, the Ministry will be provided with an opportunity to provide input that will be considered in the drafting of the environmental assessment report and management plan. We further request your office to provide us with any documentation or legislation that may be deemed applicable to the project.

Please register and provide comments by **23 March 2020**. To register, please contact **Fax: 088-62-6368**, **E-Mail: mariculture@thenamib.com** or contact Geo Pollution Technologies at telephone 061-257411 for more information.

Thank you in advance.

Sincerely,

Andre Faul  
 (Conservation Ecologist)



Directors:

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

## Lüderitz Town Council Notification



TEL: (+264-61) 257411 ♦ FAX: (+264) 88626368  
 CELL: (+264-81) 1220082  
 PO BOX 11073 ♦ WINDHOEK ♦ NAMIBIA  
 E-MAIL: gpt@thenamib.com

**To:** Interested and Affected Parties **03 March 2020**  
**Re:** Environmental Scoping Assessment and Environmental Management Plan for Oceangrown Namibia's Mariculture Activities at Lüderitz

Dear Sir/Madam

Geo Pollution Technologies (Pty) Ltd was appointed to undertake an environmental assessment for the mariculture activities of Oceangrown Namibia CC at Lüderitz. The assessment will be conducted according to the Environmental Management Act of 2007 and its regulations as published in 2012.

**Project:** Environmental Scoping Assessment and Environmental Management Plan for Oceangrown's Mariculture Activities at Lüderitz.

**Proponents:** Oceangrown Namibia CC

**Environmental Assessment Practitioner:** Geo Pollution Technologies (Pty) Ltd

The ocean water at Lüderitz is ideal for mariculture activities and as such, the local culturing of oysters, abalone and mussels have been ongoing for many years. The Proponent has an existing mariculture license to grow Pacific oysters (*Crassostrea gigas*), Peruvian scallops (*Argopecten purpuratus*), black mussels (*Mytilus galloprovincialis*) in Mariculture Area 7, 14, 17 and 20, Lüderitz Harbour. The licence also includes ranching of abalone (*Haliotis midae*) at selected offshore locations south of Lüderitz. Oceangrown is currently not operational and their processing plant in the Lüderitz boatyard is temporarily closed.

Operational activities will be conducted offshore and onshore. Offshore, floating long lines are either populated with: 1) baskets containing oyster and scallop spat; or 2) ropes acting as substrate for attachment of mussels. Abalone spat is resettled in the selected areas by divers. Culturing is staggered to ensure that marketable sized oysters, scallops, mussels and abalone can be harvested continuously. Oysters, scallops and mussels are collected while abalone is retrieved by divers using a small boat. Collected shellfish is returned to the onshore processing plant for cleaning and sizing. Undersized oysters, scallops and mussels are returned to the ocean in newly populated baskets, while larger ones are processed and packaged for shipment. Spat will be obtained from Beira Aquaculture in Swakopmund or from approved international markets. To download the background information document, please visit: [www.thenamib.com/projects/projects.html](http://www.thenamib.com/projects/projects.html)

All interested and affected parties (IAPs) 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 provide input that will be considered in the drafting of the environmental assessment report and management plan.

Please register as an I&AP and provide comments by **23 March 2020**. To register, contact Geo Pollution Technologies at: **Fax:** 088-62-6368 / **E-Mail:** [mariculture@thenamib.com](mailto:mariculture@thenamib.com)

Should you have any additional queries, kindly contact the project team on 061-257411.

Thank you in advance.

Sincerely,

André Faul (Conservation Ecologist)



Directors:

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



## Namport Notification



TEL: (+264-61) 257411 ♦ FAX.: (+264) 88626368  
 CELL.: (+264-81) 1220082  
 PO BOX 11073 ♦ WINDHOEK ♦ NAMIBIA  
 E-MAIL: gpt@thenamib.com

To: Interested and Affected Parties 03 March 2020

Re: Environmental Scoping Assessment and Environmental Management Plan for  
 Oceangrown Namibia's Mariculture Activities at Lüderitz

Dear Sir/Madam

Geo Pollution Technologies (Pty) Ltd was appointed to undertake an environmental assessment for the mariculture activities of Oceangrown Namibia CC at Lüderitz. The assessment will be conducted according to the Environmental Management Act of 2007 and its regulations as published in 2012.

**Project:** Environmental Scoping Assessment and Environmental Management Plan for Oceangrown's Mariculture Activities at Lüderitz

**Proponents:** Oceangrown Namibia CC

**Environmental Assessment Practitioner:** Geo Pollution Technologies (Pty) Ltd

The ocean water at Lüderitz is ideal for mariculture activities and as such, the local culturing of oysters, abalone and mussels have been ongoing for many years. The Proponent has an existing mariculture license to grow Pacific oysters (*Crassostrea gigas*), Peruvian scallops (*Argopecten purpuratus*), black mussels (*Mytilus galloprovincialis*) in Mariculture Area 7, 14, 17 and 20, Lüderitz Harbour. The licence also includes ranching of abalone (*Haliotis midae*) at selected offshore locations south of Lüderitz. Oceangrown is currently not operational and their processing plant in the Lüderitz boatyard is temporarily closed.

Operational activities will be conducted offshore and onshore. Offshore, floating long lines are either populated with: 1) baskets containing oyster and scallop spat; or 2) ropes acting as substrate for attachment of mussels. Abalone spat is resettled in the selected areas by divers. Culturing is staggered to ensure that marketable sized oysters, scallops, mussels and abalone can be harvested continuously. Oysters, scallops and mussels are collected while abalone is retrieved by divers using a small boat. Collected shellfish is returned to the onshore processing plant for cleaning and sizing. Undersized oysters, scallops and mussels are returned to the ocean in newly populated baskets, while larger ones are processed and packaged for shipment. Spat will be obtained from Beira Aquaculture in Swakopmund or from approved international markets. To download the background information document, please visit: [www.thenamib.com/projects/projects.html](http://www.thenamib.com/projects/projects.html)

All interested and affected parties (IAPs) 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 provide input that will be considered in the drafting of the environmental assessment report and management plan.

Please register as an I&AP and provide comments by **23 March 2020**. To register, contact Geo Pollution Technologies at: **Fax:** 088-62-6368 / **E-Mail:** [mariculture@thenamib.com](mailto:mariculture@thenamib.com)

Should you have any additional queries, kindly contact the project team on 061-257411.

Thank you in advance.

Sincerely,

André Faul (Conservation Ecologist)



Page 1 of 2

Directors:

P. Botha (B.Sc. Hons. Hydrogeology) (Managing)

## Newspaper Advertisements

MONDAY, MARCH 9, 2020

NEWS

SUN 3

100 000 CASES REPORTED WORLDWIDE

# Namibia tests 3 for coronavirus

JEMIMA BISHOP

Erring on the side of caution, two people who recently travelled to Japan as well as a Rehoboth-based woman have been tested for coronavirus, despite not meeting the standard case specifications.

The ministry of health has taken swabs from three people possibly infected with the coronavirus.

World Health Organisation (WHO) director-general Tedros Adhanom Ghebreyesus tweeted yesterday that 100 countries have reported coronavirus cases.

He added that this comes after 100 000 cases were reached worldwide.



Health ministry executive director Ben Nungombe yesterday said two of these people travelled from Japan and reported to a private medical facility after their arrival in Namibia.

They have since been discharged.

"They arrived in the country on 5 March and presented themselves at a private medical facility with coughing and difficulty breathing, but no fever," he said.

The third case is a Rehoboth-based woman who works with Chinese nationals, who recently arrived in Namibia with excessive coughing.

"All these cases do not meet the standard case specifications but because of an abundance of caution, we are treating them as suspected cases. We have taken swabs from them and are waiting for the results from the laboratory," Nungombe said.

**SENDS:** Namibia is testing suspected cases of coronavirus. PHOTO: WHO

He emphasised that a case is only confirmed once specimens have been tested by a laboratory. Symptoms of the coronavirus are coughing, difficulty in breathing and fever.

These developments follow after neighbouring South Africa reported its third coronavirus case yesterday morning.

South African media reported that health minister Zweli Mkhize yesterday announced that the third case was the wife of the man previously announced as infected, who had just returned from holiday in Italy.

The couple were part of a group of 10 people who recently travelled to the European country.

Meanwhile, Al Jazeera reported that Italy documented 41 new deaths from the coronavirus on Thursday, bringing the death toll to 148, the second highest outside of China, where just over 3 000 people have died since the out-

## Swapo walkout at Rundu as mess continues

KENYA KAMBONJE

The Swapo Rundu Urban District executive staged a walkout during an election and swearing-in ceremony of office-bearers for the Rundu town council on Friday.

This after Swapo Rundu Urban District coordinator Gabriel Hukusembe and fellow Swapo member Gabriel Kanyanga did not take lightly to Magistrate Helelo Olaiya's decision to not accommodate their objection to the ceremony. The two were joined in their walkout by other Swapo members.

Hukusembe and Kanyanga objected to Magistrate Olaiya while she was presiding over the ceremony, which took place at the Rundu Magistrate's Court.

They informed the magistrate that a matter involving three council-

ors, Isak Kandonga, Anastacia Antonia and Tami Hasiiku, who were reportedly recalled by the executive committee from serving on the Rundu town council, is being dealt with by the Swapo politburo, therefore they cannot be sworn in.

In fact, this is the second time Hukusembe interjected Olaiya, as he previously did so during the same event last December at the council chambers, which led to the event being postponed until further notice.

However, on Friday Olaiya informed Hukusembe and Kanyanga that she will not allow party politics to play out in the chamber before warning them that if they continued with their behaviour, she would let the police intervene and remove them from the venue.

"As I have said, I am just in charge of the swearing-in ceremony. Anyone who has a problem, sort it out. I'll get any more interruptions, I will have no other choice but to allow the police officers to do their work and remove whosoever wants to interrupt as I am going to proceed with the process that brought



IN THE MIDDLE The four councillors who were present in chambers last Friday. PHOTO: KEVIN KAMBE

me here," she said. Kanyanga and Hukusembe then stood and informed their fellow group of Swapo members to excuse themselves from the event. Olaiya proceeded with the election and swearing-in ceremony, which however turned out to be not fully successful.

Although Kandonga was duly nominated and elected as the new mayor of Rundu, the event had to be postponed to today after no nomination was made for the occupation of the deputy mayor position. Neither Kandonga, Hasiiku, Anto-

nia or All People's Party councillor Mathwe Wakudamu responded to Olaiya's request for nominations for the position.

Olaiya then packed up her books before saying she would consult the law as to what should happen next. For the past year, Rundu town council has been without a deputy mayor after Hasiiku, who was elected into the position last year, had to resign to occupy a seat at the management committee, which was incomplete and has affected decision-making. With only four councillors in the

chambers, Namibian Sun understands that the four decided not to nominate for the deputy mayor position in hopes that Antonia, Hasiiku and Wakudamu will be able to fill the three seats on the management committee.

In the midst of all the political squabble within the ruling party, Rundu continues to face a number of challenges as both tar and gravel roads are littered with potholes, waste heaps up all around town and the ever-expanding informal settlements increase cases of illegal water connections.

## SA processes delay SME Bank inquiry

DOONIE YLHADE

The commission of inquiry set up to probe the demise of the SME Bank is unsure when the second round of questioning with key witnesses will resume, saying processes in South Africa are holding up proceedings.

High Court judge Husein Angula in 2018 granted an inquiry into the demise of the bank meant to help small and medium enterprises.

The order granted by Angula authorities Windhuk's lawyer Natasha Bassingthwaite to summon witnesses to be questioned about their knowledge of the affairs of S&ME Bank.

Bassingthwaite, when asked to shed light into the status of the inquiry, said it was hard to tell when things would resume in Namibia as liquidators Brian & McLaren were also conducting proceedings in neighbouring South Africa.

The provisional liquidators



**INQUIRY TO RETURN:** The inquiry into the demise of the SME Bank will return at a yet-to-be-determined date. PHOTO: FILE

were in August 2018 granted a timeline through a court order in the South Gauteng High Court to recover money suspected to have been siphoned to that country.

In terms of the order, four bank accounts, holding a combined amount of N\$43.8 mil-

lion, have been frozen until further legal proceedings have been completed.

An amount of N\$12.5 million is in one of the accounts in the name of the company Moody Blue Trade and Invest 14, according to First National Bank, where the account is held. The other three accounts, all in the name of the company AMPB Solutions, are also at FNB, and hold amounts of N\$297 million, N\$1.3 million and N\$230 000. The Namibian reported in August 2018.

In an affidavit filed at the court, Bassingthwaite stated that through "various questionable transactions" that occurred between April 2018 and August 2018, payments totalling N\$24.9 million had been made by SME Bank to Moody Blue Trade and Invest 14, while a total amount of N\$79.8 million, paid by the bank to the South African close corporation Asset Movement and Financial Services, was channelled to AMPB Solutions.

"The inquiry has not been completed. I can unfortunately not give any indication when it will be completed and when we will sit again. The liquidators and their legal representatives are also conducting proceedings in South Africa and that impacts on when we sit," Bassingthwaite said.

She added that authorities would have to decide on the way forward following the conclusion of the inquiry.

"The decision as to the further steps to be taken after the commission has been completed will depend on the information obtained during the inquiry," she said.

"Unfortunately, I cannot provide you with any further information at this stage as the proceedings are confidential," she added. Mitoziya shareholder in the SME Bank, Enock Kamushinda, and other shareholders in June 2018 lodged a legal bid to have the inquiry established yet aside.

### PUBLIC PARTICIPATION NOTICE ENVIRONMENTAL ASSESSMENT OCEANGROWN NAMIBIA'S MARICULTURE ACTIVITIES - LUBCHITZ

Geo Pollution Technologies (Pty) Ltd was appointed to undertake an environmental assessment for mariculture activities of OceanGroww Namibia CC at Lubchitz. The detailed project location and background information may be viewed at:

<http://www.thenamibia.com/projects/projects.html>

The environmental assessment will be conducted according to the Environmental Management Act of 2002 and its regulations as published in 2012.

The ocean water at Lubchitz is tidal for mariculture activities and as such, the local outflowing of oxygen, ammonia and nutrients have been ongoing for many years. The Proponent has a mariculture license for farming of Pacific oysters, Penaeus shrimps and black mussels as well as smelting of abalone at Lubchitz.

All interested and affected parties are invited to register with the environmental consultant. By registering you are provided with the opportunity to share any concerns, issues or concerns related to the project, for consideration in the environmental assessment. Additional information can be requested from Geo Pollution Technologies.

All comments and concerns should be submitted to Geo Pollution Technologies by 23 March 2020.

**André Paul**  
Geo Pollution Technologies  
Telephone: +264-61-257411  
Fax: +264-61-257418  
E-Mail: [enquiries@thenamibia.com](mailto:enquiries@thenamibia.com)





**DIRE** Namibian farmers are going under because of prolonged drought and high loan repayments. PHOTO: I&L

**ELLANIE SMIT**

**According to the official opposition leader the agriculture sector needs close to NS4 billion in three to four years to be able to rebound.**

The government needs to implement an urgent bailout plan for farmers who have been hit by compounded drought and also review their loan repayment schemes at banks in order for the agriculture sector to rebound.

This was said by Popular Democratic Movement (PDM) president McKhary Venaani in his motion on the bailout plan for farmers in the National Assembly last week.

According to him the agricultural sector needs close to NS4 billion in three to four years to be able to rebound and to start helping economic growth and sustain more jobs.

"Over the past seven years, our country has experienced the toughest

and most challenging period for all our farmers, as well as for agricultural production areas, due to the severity of the drought that has affected all regions of the country."

Venaani said since 2014, commercial farmers, communal farmers and emerging farmers have been struggling with livestock losses, crop failures and pasture and water availability. According to him this is not just a setback for farmers, but a national problem that needs the serious intervention of a bailout plan for commercial farmers who are severely hit by compounded drought and the high repayment of their loans at commercial banks as well as at AgriBank.

"Our country needs to find measures to address the problem and provide sufficient support for all our farmers that incurred production and other losses."

Venaani further said that because Namibia is an arid country the sector is one of the most vulnerable to drought.

"During these drought years, availability of water decreased substantially, as there had not been inflows into dams, and much of the water

evaporates." He said in remote areas, where there is no potable water and communities rely on earthen dams and wells, the water table recedes, forcing people to dig deeper or travel longer distances in search of water.

According to him the Livestock Producers' Organisation (LPO), which is affiliated to the Namibia Agricultural Union (NAU), conducted a short survey among its members to determine the decline in livestock numbers from the end of 2012 (when the drought period began) until the end of 2019.

He said the analysis of this data comes from approximately 470 commercial livestock producers across the country.

**Herd devastated**

The results showed that cattle herds had decreased by 44%, while sheep and goat flocks had decreased by 48%. These decreases were due to marketing, but included mortalities too. "The percentage decline is only averaged and there are several producers who indicated they had a 100% decrease and no animals left in the fold," said Venaani.

He further said that since 2014 there has not been a time when at least one of Namibia's major agricultural production areas had not suffered a severe drought.

Venaani also referred to the Food Security Situation Report of March 2019, which assessed the crop prospects and livestock situation for 2019 to establish the country's stance in terms of food security.

According to him it revealed that the deteriorating grazing conditions experienced in most parts of the country due to poor rainfall led to 61 712 animals dying in six months, with Kunene North and the Erongo Region being the most affected, losing 12 200 and 11 000 animals respectively.

Venaani said as part of a bailout plan, the ministry of finance needs to intervene in this crisis through all commercial banks and AgriBank.

He said this can also be done with the support of the agriculture ministry, farmers and agricultural unions across the country.

**Low-interest loans**

"One of the ways we can ponder to assist our farmers, I believe, is through

lending them funds in order to recover from the drought impacts.

"As we speak, there are fewer and fewer farmers in the market, as most of them are unable to sustain themselves and run farms productively. Our farmers are unable to repay their loans."

"The financial model under which our farmers are struggling to shoulder debt needs an urgent revisit. This can go a long way in assisting them."

He said it is important that the government, through the ministry of finance, AgriBank and commercial banks, come to the aid of all farmers by providing access to low-interest loans. "We should review the repayment schemes and apply the conditions faced by all our farmers in order to address their plight."

Venaani said according to the Food and Agriculture Organisation's quarterly Crop Prospects and Food Situation Report, Namibia and Tanzania have been added to the list of countries in need of external food aid.

"This illustrates how dire the situation truly is and why we should implement a comprehensive bailout plan for our farmers," he emphasised.

**PUBLIC PARTICIPATION NOTICE ENVIRONMENTAL ASSESSMENT OF OCEANGROWN NAMIBIA'S MARICULTURE ACTIVITIES - LÜDERITZ**

Geo Pollution Technologies (Pty) Ltd was appointed to undertake an environmental assessment for mariculture activities of Oceangrown Namibia CC at Lüderitz. The detailed project location and background information may be viewed at:

<http://www.elformsaah.com/projects/geojens.html>

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

The ocean water at Lüderitz is ideal for mariculture activities and as such, the local subjecting of oysters, abalone and mussels have been ongoing for many years. The Proponent has a mariculture licence for farming of Pacific oysters, Peruvian scallops and black mussels as well as marketing of abalone at Lüderitz.

All interested and affected parties are invited to register with the environmental consultant. By registering you are provided with the opportunity to share any comments, views or concerns related to the project, for consideration in the environmental assessment. Additional information can be requested from Geo Pollution Technologies.

All comments and concerns should be submitted to Geo Pollution Technologies by 23 March 2020.

**Andrié Faud**  
Geo Pollution Technologies  
Telephone: +264-61-237411  
Fax: +264-68626368  
E-Mail: [andri@elformsaah.com](mailto:andri@elformsaah.com)



**Top Air Namibia executive resigns**

**ELLANIE SMIT**

**Air Namibia has announced that its general manager of commercial services, Xavier Swamiso Masule, has resigned with effect from 10 April.**

The process to recruit his replacement will commence soon, the airline said.

"In the interim, the airline will find a suitable person to act in that position, to enable a smooth handover process," Air Namibia said in a statement issued by spokesman Paul Nakawa on Friday.

"Since joining Air Namibia in 2006, Masule has been a valuable member of our team and his contributions have been vital to the airline's success." Masule held various management positions at Air Namibia.



**SERVICE** Air Namibia's general manager of commercial services, Xavier Swamiso Masule. PHOTO: I&L

His first position at the airline was assistant manager; management accountant. Two years down the line, he was promoted to the position of manager, corporate finance during the year 2008 - a position he served in for two years. He briefly left and rejoined the airline in 2004, serving in the position of senior manager finance.

In the year 2007, he was appointed as business development executive and in 2010 as general manager commercial services, a position he held until his resignation.

From the period, March 2020 to mid-February 2020, Masule served as the Interim CEO of the national airline. "I have enjoyed my work, grew in my career, met diverse people from

various backgrounds and cultures, and have seen the airline grow from strength to strength." Masule said in brief, reflecting on his 20-year career at Air Namibia.

Air Namibia acting CEO Ellis Branstis said: "On behalf of everyone at Air Namibia, I would like to wish Mr Masule the best of success with his future endeavours."



# Okahandja sukkel voort

**Deer Kating**  
 De. Pryn Mshelenge, die minister van streeklake en landlike ontwikkeling, het verlede week gesê die Okahandja-dorp word met hul sukses skriftelik aan hom verduidelik. Maar, het hy gesê, dit is 'n saak tussen hom en hulle. Voorverlede week het hy by navraag aan Republiekain gesê hy moet eers vasstel wat presies op die tuisdorp aangaan voor hy hom daarvoor kan uitlaai. Die dorp is sedert Desember sonder 'n formele raad nadat die vorige raad se termyn verstryk het, het Mshelenge bevestig. Hy het gesê: "Die ampdragers se termyn het in Desember geëindig. Geen ander ampdragers is verkies nie. Die dorp is sonder 'n bestuurskomitee

en ampdragers sees 'n burgemeester en adjunkburgemeester."  
**WATERKOMMER DUUR VOORT**  
 Baie Okahandja-inwoners noes die afgelope week vir minstens 'n dag weer sonder water vir lief nees. Dit kom dae ná groot gedeeltes van die dorp 'n week lank sonder water gestrand was. Mrs. Pooella Namda, waarnemende uitvoerende hoof van die Okahandja munisipaliteit, het gesê 'n pyp het Woensdag in Nau Aft gebors wat die watertoevoer alreeds het. Volgens hom is die pyp intussen herstel. Om voorverlede week se waterprobleem het Namda gesê: "Hier is 'n aantal biggings wat sonder water is. Om het baie hoë druk in die pyppe, wat die pyppe laat bars."  
 - [deernat@republiekain.com](mailto:deernat@republiekain.com)



Ronel Peters van Raach Elohim, Hebreus vir God se Asem, op Swakopmund het geskenkpakke vir nuwe mammas in die staatshospitaal op Walvisbaai uitgedeel.



# Hulp, hoop vir desperate ma's

**» Veilige hawe vir babas**

**Die Namibiese kinderwet maak voorsiening daarvoor dat 'n ma haar baba anoniem op 'n veilige plek mag laat sonder om vervolging in die gesig te staar.**

**Hesterette Lamprecht**

"E" k wil hié elke mamma wat beplan om haar baba weg te gooi of dood te maak, moet sy bel. Ek is bereid om 'n enige plek in Namibië te ry en haar babatjie te gaan haal, sy moet hom of haar net nie enige leed aanleë nie."  
 Dit is me. Ronel Peters van Swakopmund se pleidooi wat met Raach Elohim 'n veilige hawe as alternatief vir desperate ma's op die kindersopgeskopskat.  
 In Februarie verlede jaar is die Namibiese kinderwet verander

om voorsiening te maak daarvoor dat 'n ma haar baba anoniem op 'n veilige plek mag laat sonder om vervolging in die gesig te staar. Dit mek die baba ongedeelte is om die plek wat 'n veilige plek is. Dit sluit in hospitale, polisie-kantore en amptelike plekke van veiligheid soos Raach Elohim.  
 "Ek dink nie genoeg mense weet van ons stigting en tuisde nie. Ook weet mense wat hul babas weggooi of doodmaak nie hulle kan die babas anoniem op enige veilige plek las nie. Hulle weet stede midde wat is verander en dat hulle wel hul babas anoniem mag las in 'n hospitaal, polisiekantoor of ander veilige plek nie," at Peters.  
**"GOD SE ASEM"**  
 Raach Elohim beteken "God se asem" in Hebreus.  
 "Want net anders is 'n klein babatjie die Here se asem." An die

Here nie die asem in hom blaas nie, is daar nie lewe nie," at sy. Peters en haar man, Dick, kon verlede jaar met die hulp en leiding van die ministerie van geslagsgelykheid en kinderswelskap hul huis op Swakopmund amptelik as individuele plek van veiligheid laat verklaar.  
**VRYWILLIGE ORGANISASIE**  
 Dit beteken hulle kan tot ses babas op 'n slag versorg. Daarom het hulle aansoek gedoen om as 'n liefdadigheids-organisasie te registreer om geld in te samel vir die uitgawe wat hiermee gepaard gaan. Die regner het ook 'n vrywillige organisasie gestig met 'n veilige grondgebied en sow gelede wat behuise rakende die veilig hawe naam. Peters reik vooruitstarende na nuwe en voornemende ma's uit en producer cover monstrik die boodskap versprei dat hulp beskikbaar is.

Tydens een van die uitreike het Peters die kraamafdeling van die Walvisbaai se staatshospitaal besoek om ander meer geskenk-pakke aan nuwe ma's uit te deel. "Ons kon hulle bemoedig, ondersteun en raad gee en ook meer van ons organisasie vertel. Almal moet hiervan weet sodat daar nooit weer 'n babatjie weggegooi word nie!"  
 Volgens Peters is daar 'n groot behoefte aan plekke soos Raach Elohim, waar weggoosbabas verworg, liefdes en zandag kry. "Ek het altyd gefink as ek met een baba kan red van 'n doodsoed of 'n drui rivierloop, dan was altes die moete word."  
 Raach Elohim is deo 'n tydlike opsie tot alle wettlike prosesse afgehandel en die babas aangeneem is of met hul ouers of familie hering word.  
 Vir meer inligting, kontak Peters by 081 242 6596 of besoek die Facebook blad "Raach Elohim Foundation".  
 - [hesterette@republiekain.com](mailto:hesterette@republiekain.com)



Die Okahandja-munisipaliteit is pal in die nuus.

**PUBLIC PARTICIPATION NOTICE**  
**ENVIRONMENTAL ASSESSMENT: PROVISION OF TEMPORARY ACCOMMODATION, CATERING AND RELATED SERVICES IN NAMIBIA**

Geo Pollution Technologies (Pty) Ltd was appointed by I Dream Africa Tours & Safaris CC to undertake an environmental assessment for the provision of temporary accommodation, (pop-up camps), catering and related services in various locations in Namibia. The assessment will be according to the Environmental Management Act of 2007 and its regulations of 2012.

I Dream Africa provides temporary accommodation in locations where no fixed accommodation or related services are present. This includes exclusive luxury camping sites in wilderness areas, fireplaces and overnight facilities for motor vehicles at different sport events, game drives and film production crews. Temporary, tented accommodation can be provided to up to 2,000 people and catering to an additional 4,000 campers with their own tents.

All interested and affected parties 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 facility, for consideration in the environmental assessment. Additional information can be requested from Geo Pollution Technologies or by visiting [www.themadlife.com/projects/projects.html](http://www.themadlife.com/projects/projects.html)

All comments and concerns should be submitted to Geo Pollution Technologies by 20 March 2020.

**Wilken Coetzer**  
 Geo Pollution Technologies  
 Telephone: +264-61-257411  
 Fax: +264-69226588  
 E-Mail: [wilken@themadlife.com](mailto:wilken@themadlife.com)

**PUBLIC PARTICIPATION NOTICE**  
**ENVIRONMENTAL ASSESSMENT: DCE ANGRUWEN NAMIBIA'S MARICULTURE ACTIVITIES - LÜHERITZ**

Geo Pollution Technologies (Pty) Ltd was appointed to undertake an environmental assessment for mariculture activities of Oceangrown Namibia CC at Lüheritz. The detailed project location and background information may be viewed at:

<http://www.themadlife.com/projects/projects.html>

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

The ocean water at Lüheritz is ideal for mariculture activities and as such, the local culturing of oysters, abalone and mussels have been ongoing for many years. The Proponent has a mariculture licence for farming of Pacific oysters, Pinctada scallops and black mussels as well as rearing of abalone at Lüheritz.

All interested and affected parties 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. Additional information can be requested from Geo Pollution Technologies.

All comments and concerns should be submitted to Geo Pollution Technologies by 23 March 2020.

**André Faust**  
 Geo Pollution Technologies  
 Telephone: +264-61-257411  
 Fax: +264-69226588  
 E-Mail: [mariculture@themadlife.com](mailto:mariculture@themadlife.com)

**Pregnant? Scared? Confused? Alone?**  
**PLEASE DO NOT ABORT, ABANDON, KILL OR DUMP YOUR BABY!**  
**We CAN and WILL help!**  
 Call or text 081 242 6596

**Nuwe mammas in die Walvisbaai-staatshospitaal se kraamsaal is met spesiale geskenkpakke bedorf.**



**Appendix D: Registered IAPs and Comments Received**





**Registered IAPs**

<b>Name</b>	<b>Organisation</b>	<b>Date Registered</b>
Ulf Grünewald	Lüderitz Nest Hotel	2020/03/04
Victor Libuku	Ministry of Fisheries and Marine Resources	2020/03/04
Simon Elwen	Namibian Dolphin Project	2020/03/04
Jürgen Fleidl	Five Roses Aquaculture	2020/03/05
La Toya Shivute	Ministry of Fisheries and Marine Resources	2020/03/05
Julien Cloete	Namdeb	2020/03/06
Ursula Witbooi	Namdeb	2020/03/06



**Appendix E: 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 : 19  
 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 Environmental Assessment Practitioner and Committee Member)

**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