

APP-001362

**CONSTRUCTION AND OPERATIONS OF AN  
ABATTOIR AND FEEDLOT IN LÜDERITZ,  
//KARAS REGION**

**ENVIRONMENTAL ASSESSMENT SCOPING REPORT**



Assessed by:




Assessed for:

**Benguella Wealth  
Farming CC**

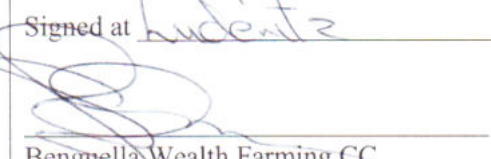
April 2023



<b>Project:</b>	<b>CONSTRUCTION AND OPERATIONS OF AN ABATTOIR AND FEEDLOT IN LÜDERITZ, //KARAS REGION: ENVIRONMENTAL ASSESSMENT SCOPING REPORT</b>	
<b>Report Version/Date:</b>	Final April 2023	
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<b>Report Approval</b>	 <b>André Faul</b> Conservation Ecologist	

I J. L. Erasmus acting as a representative of Benguella Wealth Farming CC, hereby confirm that the project description contained in this report is a true reflection of the information which the Proponent 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 and the report is hereby approved.

Signed at Lüderitz on the 25<sup>th</sup> day of April 2023.

  
 Benguella Wealth Farming CC

CC/2019/07264  
 Business Registration/ID Number  
60081300611



## **EXECUTIVE SUMMARY**

Benguella Wealth Farming CC (the Proponent) requested Geo Pollution Technologies (Pty) Ltd to conduct an environmental scoping assessment for the proposed construction and operations of a livestock abattoir and feedlot in Lüderitz. The facility is planned on the Remainder of Portion B of Lüderitz Town and Townlands No. 11 in Lüderitz, //Karas Region. As part of the planning phase of the project, the erf has to be established and zoned according for “special” land use. The Proponent intends to construct and operate the abattoir facility for the slaughtering of specifically cattle, sheep and pigs for the local market. The facility will also be equipped with an on-site butchery where carcasses will be portioned and sold to the public. The abattoir will have the capacity to slaughter approximately six heads of cattle, 20 heads of sheep and 10 pigs per week, but the quantities will vary based on the local demand. The number of livestock slaughtered may increase a little should the local market expands. The Proponent further intends to add a small feedlot on the property, where cattle and sheep can be kept until they are ready for slaughtering.

The environmental assessment is conducted to determine all environmental, safety, health and socio-economic impacts associated with the establishment and zoning of the erf, as well as the construction and operations of the facility. Relevant environmental data has been compiled by making use of secondary data and a reconnaissance site visit. Potential environmental impacts and associated social impacts were identified and are addressed in this report. Enhancement measures for positive impacts, and preventative and mitigation measures for negative impacts, are provided. It is recommended that environmental performance be monitored regularly to ensure regulatory compliance and that corrective measures be taken if necessary.

The subdivision and establishment of the erf will contribute to the growth and development of Lüderitz. It will allow for direct capital investment with, importantly, contributions to job creation and food security in the town. Positive socio-economic impacts relate to improvement of livelihoods for workers and support for local and National businesses through the acquisition of goods and services. Since there is no other abattoir in Lüderitz it will further allow for a reliable supply of fresh meat products to the local community.

Due to the nature and location of the proposed facility, potential negative impacts may realise. These will mostly be localised. The major concerns related to the construction and operations of the facility are mostly associated with animal welfare, worker health and safety, reduced air quality (odours), an increase in pests (flies) attracted to the feedlot, noise, pollution of the environment, and increased traffic to and from the site. These impacts will however be prevented or mitigated by implementation of, and adherence to, various legislative requirements and industry accepted standards. By appointing local contractors and employees and implementing educational programs the positive socio-economic impacts can be maximised while mitigating any negative impacts.

The environmental management plan (EMP) included in section 10 of this document should be used as an on-site reference document during all phases of the facility. Monitoring of, and reporting on, environmental parameters highlighted in the EMP, must be performed in accordance with environmental clearance certificate (ECC) conditions. Parties responsible for transgression of the EMP should be held responsible for any rehabilitation or corrective action that may need to be undertaken. Food safety management based on the hazard analysis and critical control point (HACCP) principles and a health, safety, environment and quality policy, or similar, should be used in conjunction with the EMP. Operators and responsible personnel must be taught the relevant contents of these documents. Town Council or national regulations and guidelines must be adhered to and monitored regularly as outlined in the EMP.

Based on the findings of this report it is recommended that an ECC be granted for both the establishment of the erf as well as the future construction and operations of the abattoir and related infrastructure. The ECC should be granted on condition that the Proponent adheres to the EMP for all phases of the development.



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## LIST OF ABBREVIATIONS

<b>AIDS</b>	Acquired Immune Deficiency Syndrome
<b>C</b>	Degrees Celsius
<b>DEA</b>	Directorate of Environmental Affairs
<b>DWA</b>	Department of Water Affairs
<b>EA</b>	Environmental Assessment
<b>ECC</b>	Environmental clearance certificate
<b>EIA</b>	Environmental Impact Assessment
<b>EMA</b>	Environmental Management Act No 7 of 2007
<b>EMP</b>	Environmental Management Plan
<b>GPT</b>	Geo Pollution Technologies
<b>HACCP</b>	Hazard Analysis and Critical Control Point
<b>HIV</b>	Human Immunodeficiency Virus
<b>HSEQ</b>	Health, Safety, Environment and Quality
<b>IBA</b>	Important Bird Area
<b>IUCN</b>	International Union for Conservation of Nature
<b>m</b>	Meter
<b>m<sup>3</sup></b>	Cubic meter
<b>MASL</b>	Meter Above Sea Level
<b>MEFT</b>	Ministry of Environment, Forestry and Tourism
<b>MSDS</b>	Material Safety Data Sheet
<b>PPE</b>	Personal Protective Equipment
<b>SANS</b>	South African National Standards
<b>SO<sub>2</sub></b>	Sulfur Dioxide
<b>SS</b>	Suspended Solids
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>WHO</b>	World Health Organization

## GLOSSARY OF TERMS

**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.

**Effluent** - Liquid waste originating from domestic, industrial, agricultural or mining activities that has been treated in a wastewater treatment facility and released into the environment in a dam, an evaporation pond, an aquifer, a river, the sea or onto the surface of the ground.

**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 Clearance Certificate (ECC)** - certificate (and its associated conditions) issued in terms of the environmental management act, authorising a listed activity to be undertaken.

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

**Groundwater** - Water - (a) occurring naturally below the surface of the ground; or  
(b) pumped, diverted or released into a cavity for storage underground.

**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.

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

**Proponent (Applicant)** - Any person who has submitted or intends to submit an application for an authorisation, as legislated by the Environmental Management Act no. 7 of 2007, to undertake an activity or activities identified as a listed activity or listed activities; or in any other notice published by the Minister or Ministry of Environment & Tourism.

**Slaughterhouse Waste** – inedible parts of animals derived from the slaughtering process inclusive of paunch (intestinal) contents, trimmings, pieces of flesh or fat falling to the floor, pieces of skin, etc.

# 1 INTRODUCTION AND BACKGROUND

Geo Pollution Technologies (Pty) Ltd was appointed by Benguella Wealth Farming CC (the Proponent) to draft an environmental scoping assessment and environmental management plan for the proposed construction and operations of a livestock abattoir on the Remainder of Portion B of Lüderitz Town and Townlands No. 11 (Figure 1-1). The Proponent intends to operate the abattoir for the receipt and slaughtering of specifically sheep, cattle and pigs for local the market. Prior to construction of the facility, the erf has to be established. This involves subdivision of the larger parcel of land (Remainder of Portion B of Lüderitz Town and Townlands No. 11) to establish the new erf, and zoning the erf for “special” land use to allow for the operations of the abattoir. In addition to the abattoir, the Proponent also intends to construct a small feedlot for cattle and sheep. Livestock will be kept in the feedlot until they are ready for slaughtering.

In general, the project components will involve:

- ◆ Establishment and zoning of the erf (to be performed by a town planning consultant).
- ◆ Construction of infrastructure (abattoir, butchery, feedlot, stores and cold rooms, standby generator room, effluent handling infrastructure, etc.) according to town council accepted and approved plans and designs.
- ◆ Receipt of livestock for slaughtering.
- ◆ Temporary keeping of some livestock in the feedlot which cannot be slaughtered immediately upon receipt.
- ◆ Slaughtering of livestock according to best available practises.
- ◆ Portioning of carcasses in the onsite butchery. This may include aspects such as making “boerewors”, mince, etc. No processing that will entail the release of noxious odours will occur (e.g. making of canned processed meats like corned meat).
- ◆ Refrigeration of all meat and carcasses.
- ◆ Sale of meat from the butchery and delivery of meat to clients in town.
- ◆ Handling and disposal of waste such as paunch contents, blood, animal wastes, etc.

A risk assessment was undertaken to determine the potential impact of the project on the environment. The environment being defined in the Environmental Assessment Policy and Environmental Management Act as “land, water and air; all organic and inorganic matter and living organisms as well as biological diversity; the interacting natural systems that include components referred to in subparagraphs, the human environment insofar as it represents archaeological, aesthetic, cultural, historic, economic, paleontological or social values”.

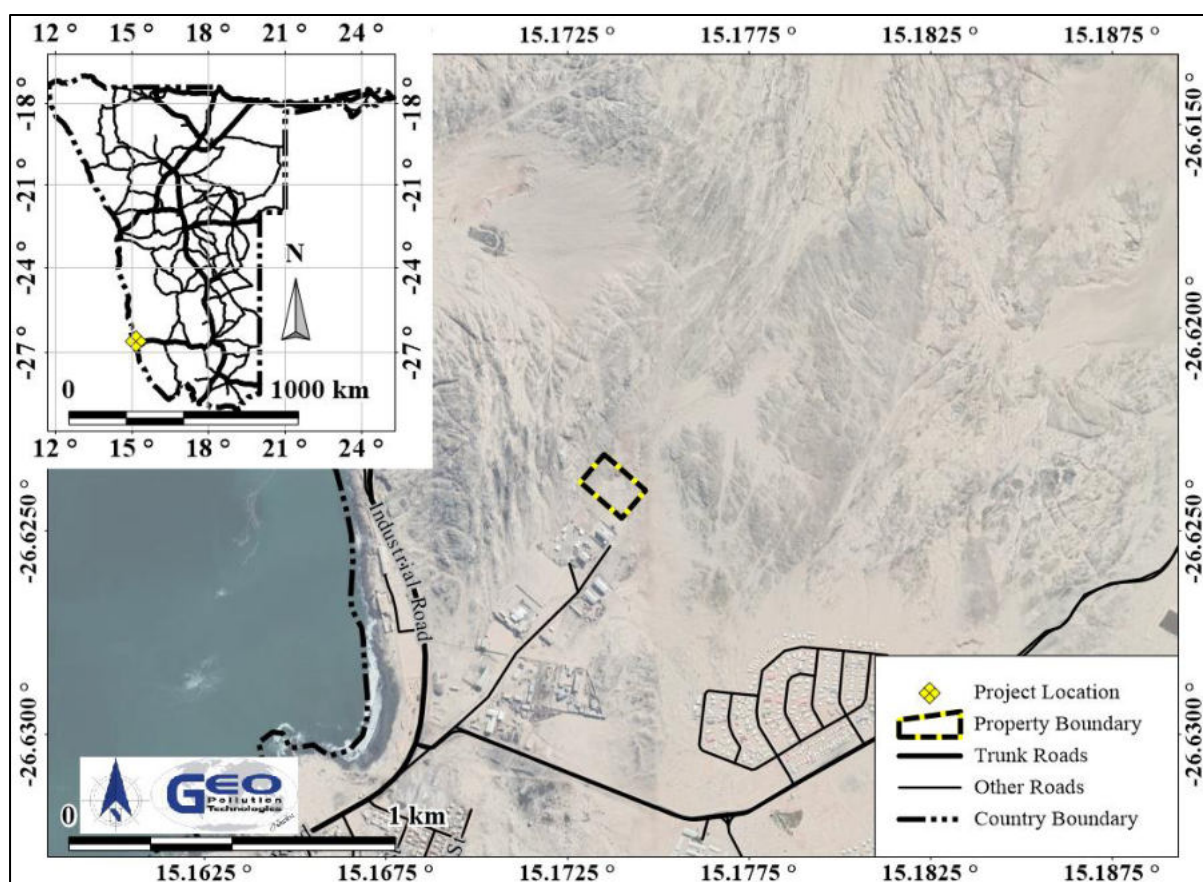
The environmental assessment was conducted to apply for an environmental clearance certificate in compliance with Namibia’s Environmental Management Act (Act No 7 of 2007).

**Project Justification** – Lüderitz is a relatively remote town and all food and goods for shops must be transported over great distances and the town does not have its own abattoir. The establishment of a local abattoir, with a continues and reliable supply of livestock to be slaughtered, will provide a convenient meat supply to the local markets, shops and hospitality industry. The facility will further provide employment opportunities in a town in need of job creation. This will improve livelihoods of not only employees, but also of all local suppliers of goods and services. It will provide a new avenue, although limited, for farmers in the //Karas Region to sell livestock to the abattoir. Diversification of businesses and industries is crucial in contributing to the economic resilience of the town.

In summary, potential benefits that may realise from the project include:

- ◆ Growth and development of the town by developing townland and expanding the industrial area.
- ◆ Support for the local and Namibian construction and services supply industries during the planning, construction and operational phases.
- ◆ Increased employment opportunities during operations as well as support for goods and services supply industries at local and national level.
- ◆ Revenue generation, payment of taxes and levies, economic growth, etc.
- ◆ Increased spending power as a result of the earning of market related salaries and wages.

- ◆ Education and skills transfer as part of employment programmes.
- ◆ Diversification of economic activity through the acquisition of services and goods as well as potential inducement of additional investments and business opportunities in the services supply sectors.



**Figure 1-1 Project location**

## 2 SCOPE

The scope of the environmental assessment is to:

1. Determine the potential environmental impacts emanating from the proposed project.
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 (MEFT) and related authorities to make an informed decision regarding the proposed project.

## 3 METHODOLOGY

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

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

## 4 PROJECT DESCRIPTION

The entire project as assessed in this report can be divided into three phases: 1) subdivision of the Remainder of Portion B of Lüderitz Town and Townlands No. 11, to establish a new erf, with the appropriate zoning; 2) establishment of the abattoir, feedlot, butchery and related support infrastructure; and 3) operational activities associated with the receipt, slaughtering, portioning and sale of meat and all related processes. The following sections provide an overview of these three phases.

### 4.1 ESTABLISHMENT OF THE ERF

The proposed location of the facility is an erf which will be established on the Remainder of Portion B of Lüderitz Town and Townlands No. 11. The erf will be zoned as “special” land use to allow for the proposed activities of the Proponent. The process of establishment and zoning of the erf is handled by an independent town planner as appointed by the Proponent. The location of the planned erf is as per Figure 1-1.

### 4.2 INFRASTRUCTURE ESTABLISHMENT

Once the erf has been established, and all plans approved by the town council, the Proponent can commence with construction of the required infrastructure. All abattoir and animal holding facilities must be designed and constructed according to the conditions as set out under the Meat Industry Act of 1981. A preliminary site layout map is provided in Figure 4-1 with details on specifically the abattoir indicated on Figure 4-2 (also preliminary). Final designs will be developed and submitted for approval with the relevant authorities.

Construction activities will mainly involve:

- ◆ Excavations for underground utilities, foundations and effluent handling.
- ◆ Concrete and brick works to construct floors and walls.
- ◆ Fitting of roofs, windows, doors, electrical installations, plumbing, etc.
- ◆ Paving, fencing and installation of gates.

Facility components on site will include:

- ◆ The abattoir’s slaughtering area which will contain all equipment to handle cattle, sheep and pigs.
- ◆ Cold storage in the form of freezers and chillers.
- ◆ A butchery where meat will be portioned and sold.
- ◆ Receiving pens where livestock will be offloaded.
- ◆ Isolation pens where sick animals, if any, can be segregated.
- ◆ The feedlot pens for cattle and sheep which will have a capacity for 12 and 20 animals respectively.
- ◆ The raceway where animals will enter the abattoir.
- ◆ A feed store.
- ◆ A skins store.
- ◆ A general workshop.
- ◆ A standby generator room with associated diesel storage (limited volumes).
- ◆ A temporary waste storage area for biological abattoir waste.
- ◆ Ablution facilities.
- ◆ Perimeter fence for with entrance/exit gate.
- ◆ An effluent handling system with a separator tank and septic tank.
- ◆ Connections for Municipal services supply of electricity and potable water.
- ◆ Elevated water storage tanks to ensure a uninterrupted supply of water to the facility.

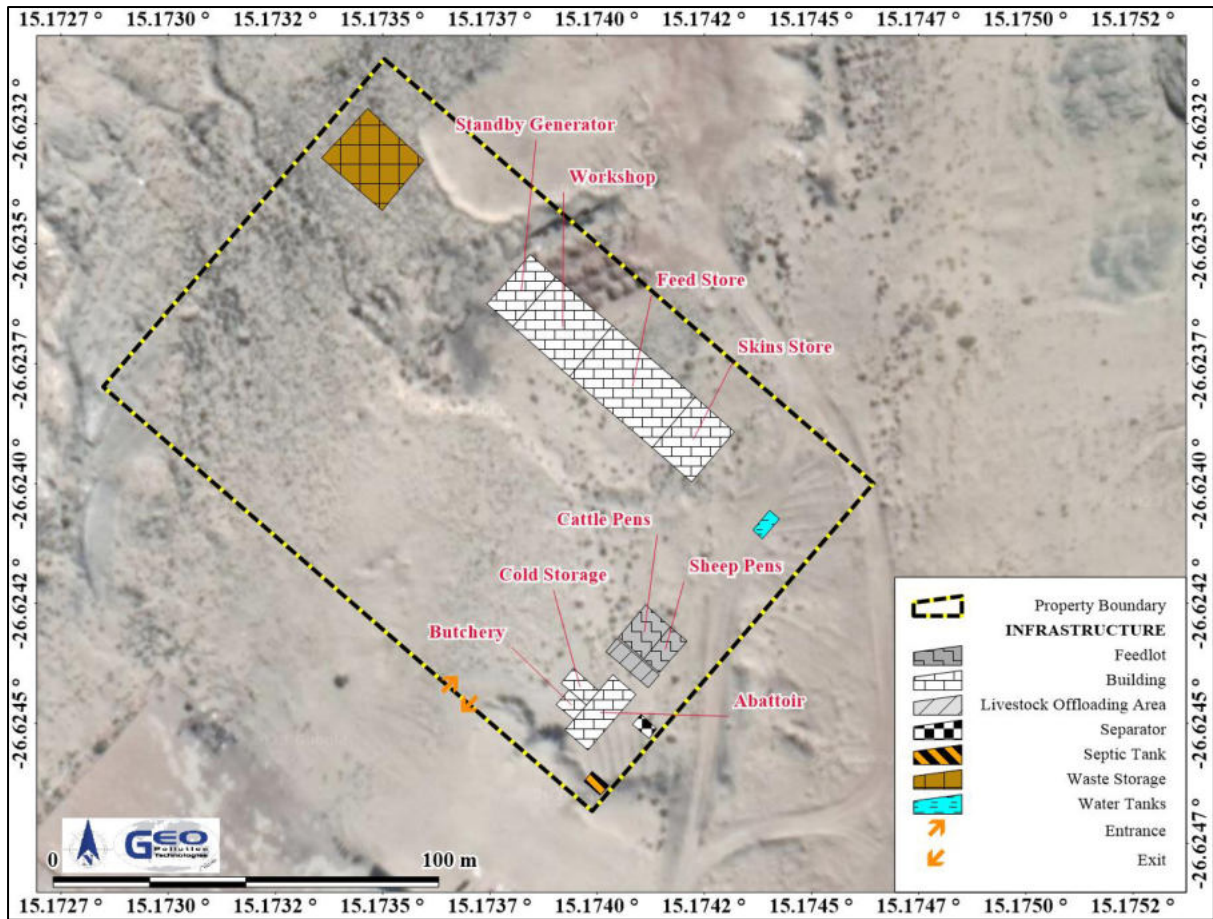
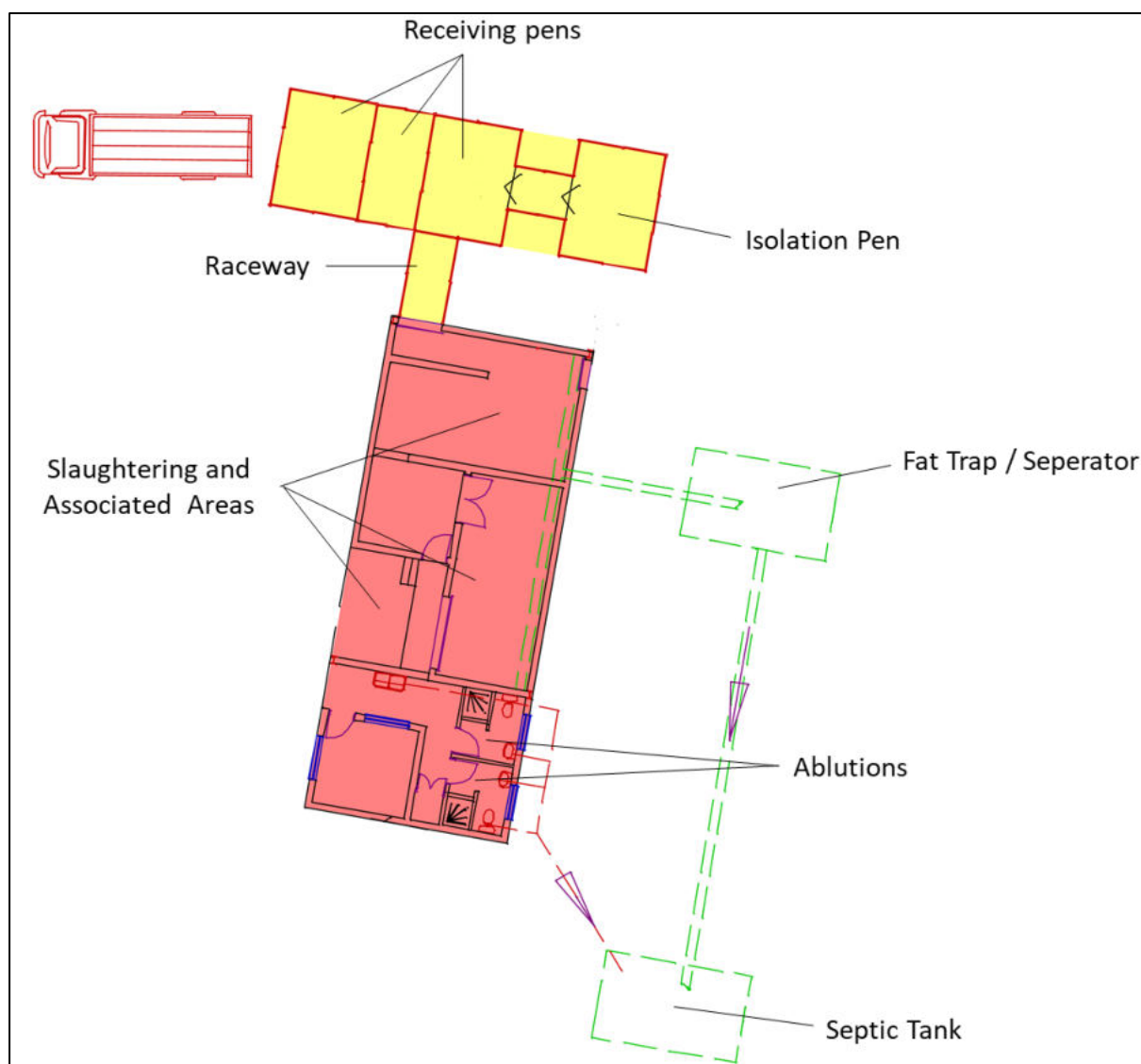


Figure 4-1 Proposed site layout



**Figure 4-2 Preliminary abattoir layout**

### 4.3 OPERATIONAL ACTIVITIES

The proposed facility will initially cater for the slaughtering of six heads of cattle, 20 heads of sheep and 10 pigs per week. These numbers may increase somewhat depending on the potential growth in the available market. Livestock will be sourced from the Proponent's own farm, but the facility will also cater for other farmers who wish to deliver livestock to the abattoir.

Vehicles delivering live sheep or cattle enter at a security gate. Livestock will then be offloaded and kept in the shaded pens. If delays in slaughtering occur the animals will be moved to the feedlot where they will be temporarily kept. Here they will receive food and water. Sick animals will be kept in an isolation pen.

When slaughtering commences, the animals are led into a "raceway" or "chute" leading to the slaughter room, situated inside the main building. Once in the slaughterhouse, the animal is stunned and then the carcass proceeds along the slaughtering line, passing by various operator stations, each of which performs specific slaughtering action. These actions are bleeding, skinning, evisceration, dressing and chilling. Some carcasses will be portioned into different cuts, while some may be kept intact, depending on client preference. Carcasses and portioned meats will be stored in cold storage units from where they will be sold in the butchery or dispatched to clients.

The main by-products are offal, horns and skins. Offal will undergo basic cleaning before being packaged. It will be stored cold rooms and sold to local clients. All skins will be salted and temporarily stored in a well ventilated skins store. Ultimately, the Proponent plans to see the local processing of skins into leather products by third parties. Paunch contents and other slaughterhouse wastes will be processed into compost (not on the same property). Manure from the pens and the feedlot will also be used as compost. The Proponent also plans to look into beneficial use of the horns.

Various waste streams will result from daily operations (Table 4-1). These include wash water from the abattoir and butchery, wash water from the pens, and domestic effluent from the ablution facilities. Effluent handling on site will involve primary treatment (screening of solids and partial digestion in a septic tank) and subsequent pumping of effluent to the Town Council's effluent treatment ponds. The Town Council indicated to the Proponent that the effluent treatment ponds can handle the effluent generated by the abattoir, if it is first partially treated in a septic tank.

All solids screened from the various effluent streams will either be disposed of at the town council's landfill or collected for re-use (composting) by third parties. All domestic waste will be disposed of at the town council's landfill. Condemned material and potentially hazardous waste will be disposed of according to the requirements of Town Council which will most likely require burning at a dedicated site.

General day to day administrative tasks will continue on site, inclusive of cleaning of the premises, waste disposal, maintenance, etc. No personnel will stay on the site and it is anticipated that at least 20 jobs will be created, but this may increase as the facility grows. Workers will include skilled, semi-skilled and unskilled workers who will perform various functions in and around the abattoir. In addition to permanent employees, various contractors will be used to perform various specialised and service related tasks.

**Table 4-1 Main waste streams and disposal methods**

Type	Category	Origin	Disposal
Dung	Solid	Lairages and other areas where livestock is handled	Used by Proponent or sold for composting or use as fertilizer
Urine	Liquid	Mixed with wash water from lairages and other areas where livestock is handled	Effluent stream
Blood	Liquid	Slaughtering area	Effluent stream
Slaughterhouse waste	Solid and liquid	Slaughtering area	Grease and fat traps installed. Solids separated from liquid. Liquids disposed in effluent ponds, solids for third party collection or disposal at Town Council landfill
Condemned material	Solid (biological)	Slaughtering, processing and cold storage area	Burned or buried according to Town Council requirements at landfill
Wash water	Liquid	All washing and cleaning water from lairages, slaughtering areas, etc.	Grease and fat traps installed and wash water to become part of effluent stream
Domestic sewage	Liquid and solid	Ablutions, kitchens	Effluent stream
Domestic and office waste	Liquid and solid	Offices, kitchens, etc.	Town Council landfill
Hazardous waste	Solid or liquid	Expired or contaminated cleaning chemicals or fuels, lubricants, pest control traps, etc.	Returned to supplier or according to Town Council requirements for potentially hazardous waste



## 5 ALTERNATIVES

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Alternatives considered for the proposed project relates to location, effluent management and the no-go alternative.

### 5.1 LOCATION

Establishing the abattoir and infrastructure on the erf on the Remainder of Portion B of Lüderitz Town and Townlands No. 11 has the following advantages and disadvantages:

#### Advantages

- ◆ Similar industry in the form of seal processing plants and other industries are already present.
- ◆ Area earmarked by the Town Council for these types of development.
- ◆ Downwind from the town and residential areas when considering the prevailing winds.
- ◆ Area significantly disturbed by sand mining, vehicle tracks and waste

#### Disadvantages

- ◆ Relatively close to the town and if pests and foul odours are not controlled may become a nuisance to residents.
- ◆ Some indigenous vegetation on site, especially on northern portion of erf, which is likely to include endemics and range restricted species.

Development of the erf on the Remainder of Portion B of Lüderitz Town and Townlands No. 11 is preferred, but with cognisance of the vegetation present and planning the site to preserve as much of the undisturbed vegetation as possible.

### 5.2 EFFLUENT

For effluent the easiest will be to direct all effluent directly into the Town Council sewers and to the effluent treatment plant. This will increase the biological and chemical oxygen demands of the effluent treatment plant, especially due to large volumes of blood, and may negatively affect its effectiveness. As an alternative a septic tank as intermediary step or a fully functional french drain system can be considered. A french drain will however require effluent to be discarded through a soak-away directly into the ground at the abattoir. A septic tank is thus proposed where partial treatment of the effluent can occur. A multi-chamber septic tank should be considered to further increase the effectiveness of pre-treatment. Also, it should be insured that as much solids, fat and blood can be removed from the effluent prior to it entering the septic tank. The septic tank must adhere to the Ministry of Agriculture, Water and Land Reform's Department of Water Affairs guideline on septic tank systems. See section 6.2.

### 5.3 NO-GO ALTERNATIVE

The no-go alternative will not see the development of the abattoir and related facilities. Thus no additional job creation will ensue and no investments in the town will be made. Local shops will have to continue bringing in meat from urban centres in central Namibia at greater cost. Farmers in the //Karas Region will not be presented with the opportunity to sell livestock to the abattoir in Lüderitz. The no-go alternative is thus not supported.

## 6 ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS

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### 6.1 NAMIBIAN LEGISLATION

To protect the environment and achieve sustainable development, all projects, plans, programmes and policies deemed to have adverse impacts on the environment require an ECC, as per the Namibian legislation. The legislation and standards provided in Table 6-1 to Table 6-3 govern the environmental assessment process in Namibia and/or are relevant to the abattoir. It should be noted that various Namibian acts and ordinances have their origins from pre-independence South African legislation, made applicable to the then "South West Africa". The Namibian legislative process is slow to repeal and replace many of these laws and they technically remain in place,

albeit mostly without accompanying regulations. Where newer acts lacks detailed or adequate regulations and guidelines, Namibia reverts to international law and often use South African regulations and South African National Standards (SANS) as guidelines for development and execution of projects. The Petroleum Products and Energy Act, for example, specifically prescribes SANS standards for fuel installations, while the Namibian meat industry uses the South African Meat Safety Act (2000) as guideline where Namibia lacks its own legislation.

The Lüderitz Town Council relies on national acts and regulations with regard to health, safety and the environment. Specifically the Environmental Management Act and its regulations, the Health and Safety Regulations of the Labour Act, and generic standards or guidelines drafted under the Local Authorities Act. Apart from such environmental orientated legislation, normal building regulations and approval of building plans are required to be adhered to, but the details of this falls outside the scope of this assessment.

Listed activities which require an ECC application (Government Regulation No 29 of 2012) related to this project include the following:

***Section 2 of Government Notice No. 29 of 2012: Waste Management, Treatment, Handling and Disposal Activities***

2.1 The construction of facilities for waste sites, treatment of waste and disposal of waste. The Proponent will temporarily store waste on site.

***Section 8 of Government Notice No. 29 of 2012: Water Resource Developments***

- ◆ 8.6 Construction of industrial and domestic wastewater treatment plants and related pipeline systems. – Although not regarded as a true wastewater treatment plant, the Proponent’s proposed septic tank is included in the assessment.

***Section 9 of Government Notice No. 29 of 2012: Hazardous Substance Treatment, Handling and Storage***

- ◆ 9.1 “The manufacturing, storage, handling or processing of a hazardous substance defined in the Hazardous Substances Ordinance, 1974.” A limited amount of fuel will be stored on site for the standby generator.
- ◆ 9.2 “Any process or activity which requires a permit, licence or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, licence or authorisation or which requires a new permit, licence or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste.” A limited amount of fuel will be stored on site for the standby generator.
- ◆ 9.5“Construction of filling stations or any other facility for the underground and aboveground storage of dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin” A limited amount of fuel will be stored on site for the standby generator.

**Table 6-1 Namibian law (as may be amended) applicable to the project**

<b>Law</b>	<b>Key Aspects</b>
<b>The Namibian Constitution</b>	<ul style="list-style-type: none"> <li>◆ Promote the welfare of people.</li> <li>◆ Incorporates a high level of environmental protection.</li> <li>◆ Incorporates international agreements as part of Namibian law.</li> </ul>
<b>Environmental Management Act</b> Act No. 7 of 2007, Government Notice No. 232 of 2007	<ul style="list-style-type: none"> <li>◆ Defines the environment.</li> <li>◆ Promote sustainable management of the environment and the use of natural resources.</li> <li>◆ Provide a process of assessment and control of activities with possible significant effects on the environment.</li> </ul>
<b>Environmental Management Act Regulations</b> Government Notice No. 28-30 of 2012	<ul style="list-style-type: none"> <li>◆ Commencement of the Environmental Management Act.</li> <li>◆ List activities that requires an environmental clearance certificate.</li> <li>◆ Provide Environmental Impact Assessment Regulations.</li> </ul>
<b>Abattoir Industry Act</b> Act No. 54 of 1976, Government Notice No. 620 of 1976	<ul style="list-style-type: none"> <li>◆ Makes provision for control on matters related to construction and operations of abattoirs.</li> </ul>
<b>Meat Industry Act</b> Act 12 of 1981, Government Notice No. 99 of 1981	<ul style="list-style-type: none"> <li>◆ Provides for control over the grading, sale, import and export of livestock, meat and meat products, and the levies on these items.</li> <li>◆ Provides for conditions to the registration of producers operating abattoirs and processing plants.</li> </ul>
<b>Namibian Food Safety Policy of 2014</b>	<ul style="list-style-type: none"> <li>◆ Aims to protect consumer health while facilitating trade in food.</li> <li>◆ Policy ensures that control standards are established and adhered to as regards food production safety, food product hygiene, animal health and welfare, plant health and preventing the risk of contamination from external substances.</li> <li>◆ Lays down conditions for regulations on appropriate labelling for these foodstuffs and food products.</li> </ul>
<b>General Health Regulations</b> Government Notice 121 of 1969	<ul style="list-style-type: none"> <li>◆ Lays down minimum requirements and standards for, among others, butcheries and abattoirs.</li> <li>◆ Requires the registration of abattoirs.</li> </ul>
<b>Animal Health Act</b> Act No. 1 of 2011, Government Notice 46 of 2011	<ul style="list-style-type: none"> <li>◆ Provide for the prevention, detection and control of animal disease and the maintenance and improvement of animal health.</li> </ul>
<b>Prevention of Undesirable Residue in Meat Act</b> Act 21 of 1991, Government Notice No. 322 of 1991	<ul style="list-style-type: none"> <li>◆ Regulate the slaughtering of animals and the marketing of meat and meat products</li> </ul>
<b>Abattoirs Restriction Proclamation 8 of 1944</b>	<ul style="list-style-type: none"> <li>◆ Places restrictions on the types of animals which can be slaughtered in abattoirs.</li> <li>◆ Prohibits slaughtering of animals other than stock without consent.</li> <li>◆ Makes no provision for regulations.</li> </ul>

<b>Law</b>	<b>Key Aspects</b>
<b>Cold Storage Works and Abattoirs Proclamation 50 of 1921</b>	<ul style="list-style-type: none"> <li>◆ Places limits on the construction and operation of cold storage works used for the export of meat.</li> <li>◆ No regulations known of.</li> </ul>
<b>Animals Protection Act</b> Act No. 71 of 1962, Government Gazette Extraordinaire of 22 <sup>nd</sup> June 1962	<ul style="list-style-type: none"> <li>◆ To consolidate and amend the laws relating to the prevention of cruelty to animals</li> </ul>
<b>Petroleum Products and Energy Act</b> Act No. 13 of 1990, Government Notice No. 45 of 1990	<ul style="list-style-type: none"> <li>◆ Regulates petroleum industry.</li> <li>◆ Makes provision for impact assessment.</li> <li>◆ Petroleum Products Regulations (Government Notice No. 155 of 2000).</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 and permits 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>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 and provide standards to which such effluent must adhere (Model Sewerage and Drainage Regulations (Government Notice No 99 of 1996)</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>Atmospheric Pollution Prevention Ordinance</b> Ordinance No. 11 of 1976	<ul style="list-style-type: none"> <li>◆ Governs the control of noxious or offensive gases</li> <li>◆ Prohibits scheduled process without a registration certificate in a controlled area.</li> <li>◆ Requires best practical means for preventing or reducing the escape into the atmosphere of noxious or offensive gases produced by the scheduled process.</li> </ul>
<b>Hazardous Substances Ordinance</b> Ordinance No. 14 of 1974	<ul style="list-style-type: none"> <li>◆ Applies to the manufacture, sale, use, disposal and dumping of hazardous substances as well as their import and export.</li> <li>◆ Aims to prevent hazardous substances from causing injury, ill-health or the death of human beings.</li> </ul>

Law	Key Aspects
<b>Pollution Control and Waste Management Bill</b>	<ul style="list-style-type: none"> <li>◆ The bill aims to prevent and regulate the discharge of pollutants to air, water, and land. It further aims to promote the establishment of a system of waste management, and enable Namibia to meet its international obligations. Only unrecyclable and unusable materials will be disposed of at a designated disposal site.</li> </ul>

**Table 6-2 Guiding documents, directives and standards**

Law	Key Aspects
<b>Meat Safety Act of 2000 of South Africa</b>	<ul style="list-style-type: none"> <li>◆ Provides guidance for the local meat industry where Namibia lacks its own regulations in respect of promotion of meat safety and the safety of animal products; standards, regulations on the importation and exportation of meat.</li> </ul>
<b>Red Meat Regulations (2004) of the Meat Safety Act (2000) of South Africa</b>	<ul style="list-style-type: none"> <li>◆ Where lacking in Namibia, provides guidelines on registrations, hygiene, treatment of animals, inspections, marks and marking, condemned material, and export and import regulations related to red meat and abattoirs.</li> </ul>
<b>Department of Water Affairs and Forestry Code of Practice: Volume 1 Septic Tank Guidelines (General Guidelines July 2008).</b>	<ul style="list-style-type: none"> <li>◆ It defines french drains and septic tanks.</li> <li>◆ Gives location consideration and tank design guidance.</li> <li>◆ Septic tanks are- not allowed between two and five meters from a building and or a boundary.</li> <li>◆ It specifically states that in rocky areas secondary treatment must be provided for soak aways.</li> </ul>
<b>SANS 893-1&amp;2:2018</b>	<ul style="list-style-type: none"> <li>◆ Standards for risk assessment and the control of <i>Legionella</i> spp. (bacteria) in water sources.</li> </ul>
<b>South African National Standards (SANS) 10131</b>	<ul style="list-style-type: none"> <li>◆ The Petroleum Products and Energy Act prescribes SANS standards for the construction, operations and demolition of petroleum facilities.</li> <li>◆ SANS 10131: 2004 Deals with above-ground storage tanks for petroleum products</li> <li>◆ Provide requirements for spill control infrastructure</li> </ul>

**Table 6-3 Relevant multilateral environmental**

Agreement	Key Aspects
<b>Stockholm Declaration on the Human Environment, Stockholm 1972.</b>	<ul style="list-style-type: none"> <li>◆ Recognizes the need for a common outlook and common principles to inspire and guide the people of the world in the preservation and enhancement of the human environment.</li> </ul>
<b>1985 Vienna Convention for the Protection of the Ozone Layer</b>	<ul style="list-style-type: none"> <li>◆ Aims to protect human health and the environment against adverse effects from modification of the Ozone Layer are considered</li> <li>◆ Adopted to regulate levels of greenhouse gas concentration in the atmosphere.</li> </ul>
<b>United Nations Framework Convention on Climate Change (UNFCCC)</b>	<ul style="list-style-type: none"> <li>◆ The Convention recognises that developing countries should be accorded appropriate assistance to enable them to fulfil the terms of the Convention.</li> </ul>
<b>Convention on Biological Diversity, Rio de Janeiro, 1992</b>	<ul style="list-style-type: none"> <li>◆ Under article 14 of The Convention, EIAs must be conducted for projects that may negatively affect biological diversity.</li> </ul>

## 6.2 ADDITIONAL POLICIES AND STANDARDS

Guidelines related to septic tanks and pond systems are implemented by the Department of Water Affairs, Ministry of Agriculture, Water and Land Reform (DWA 2008). These are:

*Department of Water Affairs and Forestry, Code of Practice: Volume 1, Septic tank Systems.*

These should be considered in the planning and design of the abattoir.

Of importance related to the placement of septic tanks are:

- ◆ They should not be closer than 2 m and 5 m from buildings and boundaries respectively. In areas where municipal by-laws apply, these must be taken into full consideration.
- ◆ Be located downhill from wells or springs.
- ◆ Never be closer than 500 to 800 m from any water resource or water supply - larger distances are preferred where possible. If closer, a proper environmental impact assessment (EIA) study to motivate this must be produced by a reputable consultant in this field.
- ◆ Not be considered for swampy areas, nor in areas subjected to flooding.
- ◆ Be located where there is a large area available with good soil penetration, serving as disposal field.

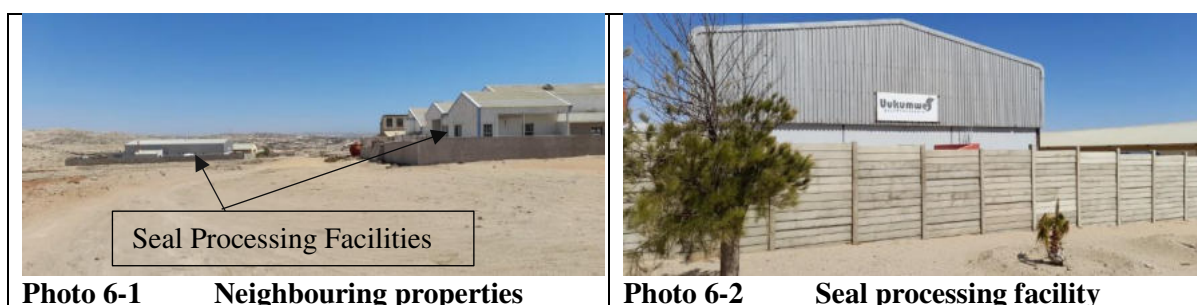
In terms of the above the placement of the septic tank should be according to the limitations set regarding distances to boundaries and buildings. There are no springs, wells, surface water or swampy areas nearby. The septic tank will not be a soak-away, but will be connected directly to the Town Council sewer system.

## 7 ENVIRONMENTAL CHARACTERISTICS

The following section provides a brief description of the environment of the abattoir.

### 7.1 LOCALITY AND SURROUNDING LAND USE

The proposed erf and related, proposed facility, will be located at the north-eastern boundary of the current built environment of Lüderitz (26.624031 °S; 15.173740 °E). It will be an erf zoned as “special” and will be on a portion of the Remainder of Portion B of Lüderitz Town and Townlands No. 11. An existing gravel road leads up to the abattoir and will provide access to the site. The only nearby erven are industrial in nature while the closest residential area is approximately 570 m to the southeast. The two industries closest to the proposed development are seal processing plants and are thus very similar in nature. All areas around the townland are Mineral License areas as held by Sperrgebiet Diamond Mining (Pty) Ltd.



#### *Implications and Impacts*

The facility is planned for an erf to be established on land earmarked for development by the Town Council. It will be similar in nature to the existing industrial areas west of the proposed erf, but very different in nature from the residential areas 570 m southeast of the property. No other properties within the town are available or suited to the type of industry.

### 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.

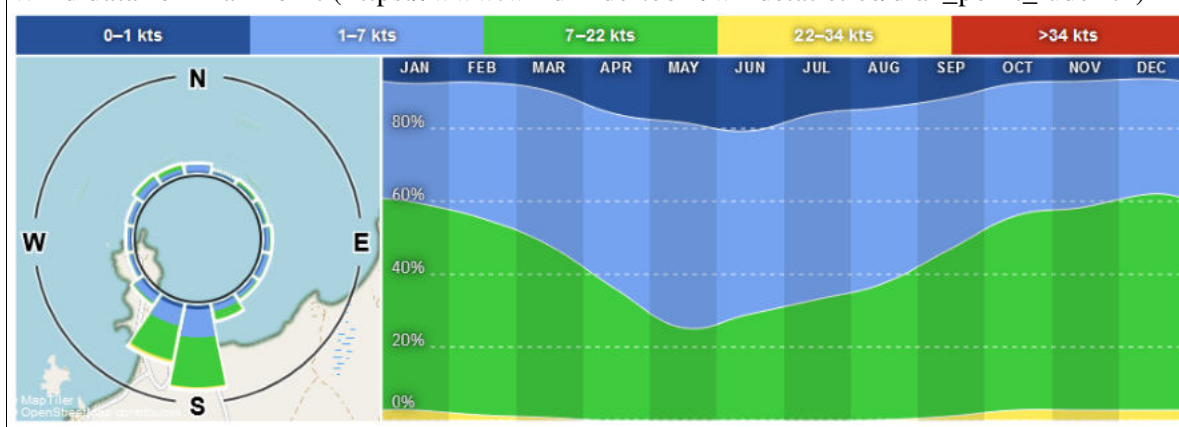
Namibia is situated within an anti-cyclone belt of the southern hemisphere. Winds generated from the high-pressure cell over the Atlantic Ocean blow from a southerly direction when they reach the Namibian coastline. As the Namibian interior is warm (particularly in summer), localised low-pressure systems 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 6-4 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 6-4 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 heavy rainfall do occur and this can result in rainfall of more than 100 mm in a short time.

Average annual temperature is 19 to 20 °C and the solar radiation index is more than 5.8 kWh/m<sup>2</sup> for the area. The prevailing wind direction is northeast to southeast with the main component being east winds (Table 6-4).

**Table 6-4 Climate summary (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-southwesterly

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



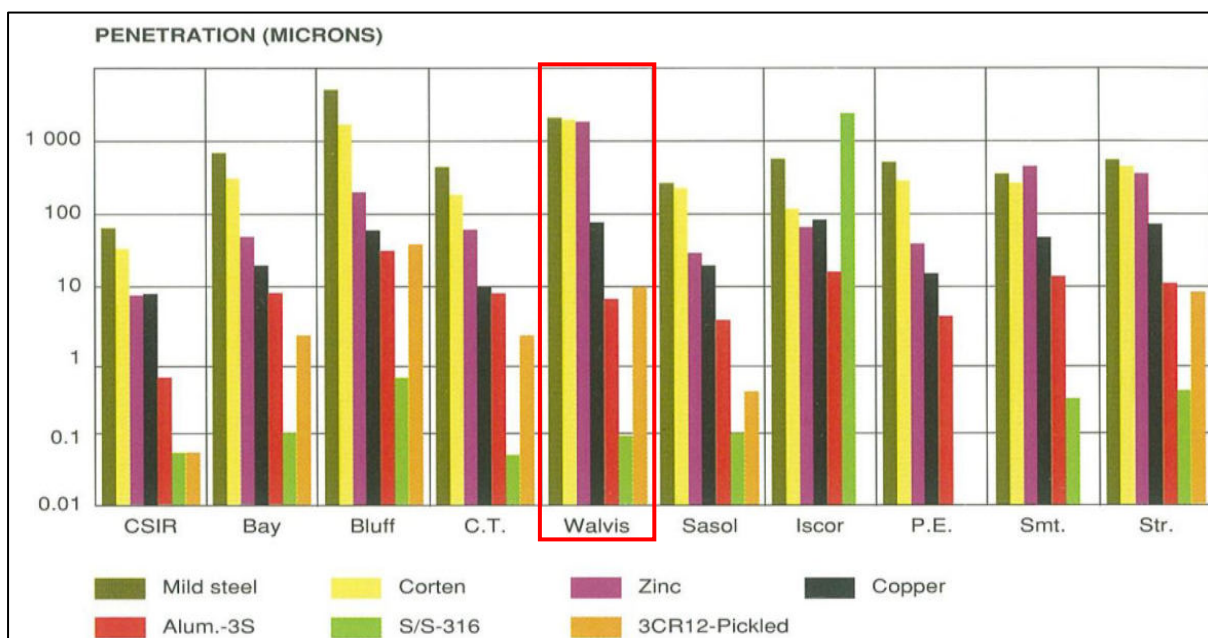
### ***Implications and Impacts***

Prevailing south to south-westerly winds will transport odours to the north and north-east and thus away from the town's built environment, and specifically the nearby residential area. The occasional heavy rainfall event may transport potential pollutants out of the site and into the surrounding undeveloped areas. Temperatures are generally cool and will limit heat related stress in animals, except when east wind conditions prevail, causing elevated temperatures.

### **7.3 CORROSIVE ENVIRONMENT**

The corrosive environment of Lüderitz can be closely related to that of Walvis Bay. The corrosive environment may be attributed to the frequent salt-laden fog, periodic winds and abundance of aggressive salts (dominantly NaCl and sulphates) in the soil. The periodic release of hydrogen sulphide (H<sub>2</sub>S) from the ocean is expected to contribute to corrosion (see Figure 6-1 for corrosion comparison data of Walvis Bay with other centres).

The combination of high moisture and salt content of the surface soil can lead to rapid deterioration of subsurface metal (e.g. pipelines) and concrete structures. Chemical weathering of concrete structures due to the abundant salts in the soil is a concern.



**Figure 6-1 20 Year corrosion exposure results (Callaghan B; 1991)**

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

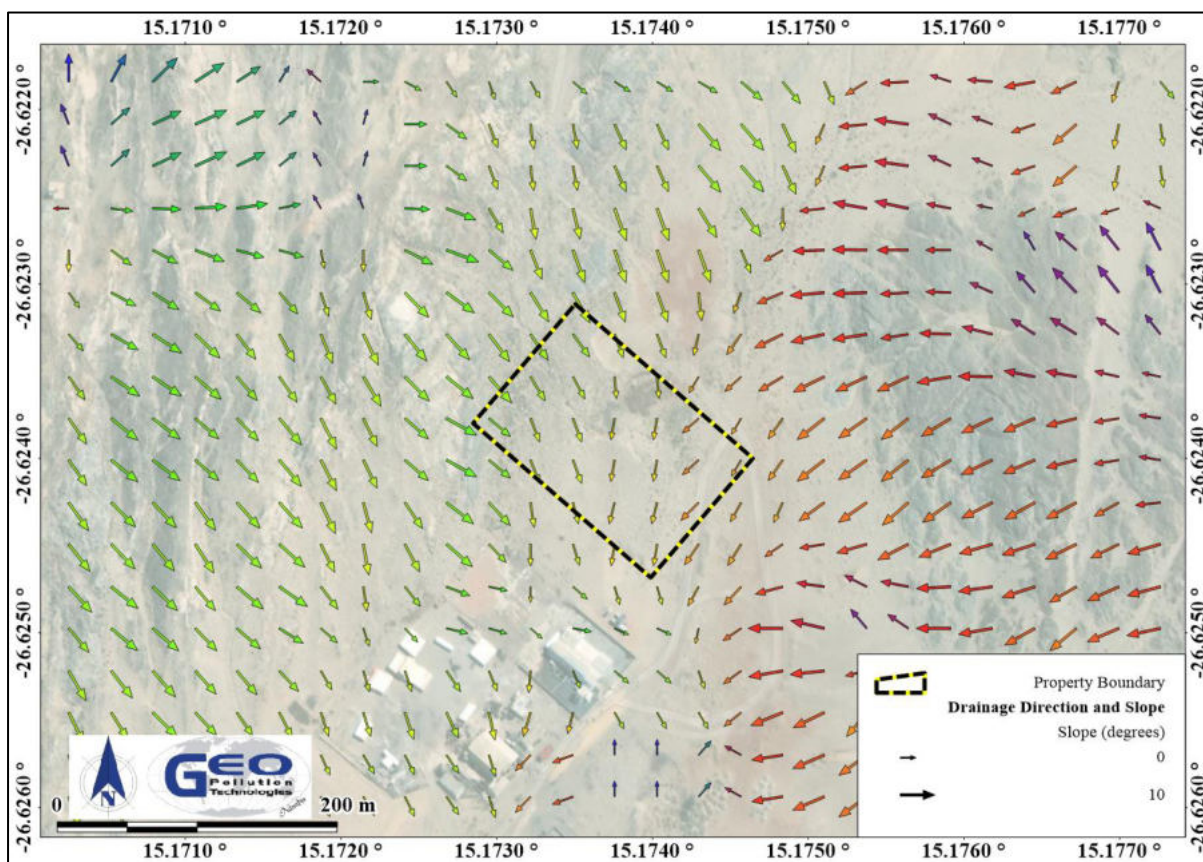
Corrosion rates are high and this may influence the integrity of structures and may result in a visual impact if not regularly maintained.

### **7.4 TOPOGRAPHY AND DRAINAGE**

The terrain around Lüderitz consist of a number of rocky outcrops with islands and peninsulas in the Atlantic Ocean. Surface drainage is poorly developed in the area due to the minimal amount of precipitation that occurs. The Atlantic Ocean is situated approximately 750 m west of the proposed abattoir erf. A distinct rocky ridge west of the proposed site reach heights of up to 90 masl, separating it from the ocean, neither of which are visible to each other. The erf is surrounded by the higher lying rock ridges, however, being located in the beginning of the open valley floor it is relatively flat, generally sloping to the south. The erf specifically has a steeper gradient with the northeast corner, closest to the rock ridges, at an elevation of about 59 m and the south western corner 16 m lower at 43 m. Surface drainage from the site will be towards the south. The project area has been affected by human activity as a result of significant quarrying that occurred in the



past and is still ongoing. These activities were and are not conducted by the Proponent and are focussed on the central and southern portions of the site.



**Figure 6-2 Drainage and direction and slope**

### *Implications and Impacts*

The natural topography shields the proposed abattoir erf and related facility from the strongest winds and visual receptors in the town. The steep ridges to the east and west of the site will increase any run-off velocity flowing through the site. Any pollutants that are not contained and are transported via surface water flow will be transported out of the site and may ultimately, in extreme instances, reach the ocean. Stormwater structure may be required around components of the site.

## **7.5 GEOLOGY AND HYDROGEOLOGY**

The area around Lüderitz is dominated by a desert with dunes and crystalline rock outcrops of the Mid-Proterozoic Era (Figure 6-3). This includes geology from the Namibian- and Mokolian Age. The Mokolian Age rocks are the oldest to be found in Namibia, dating back to 2,200 Ma. Quaternary deposits in the form of sand shifting dunes were formed by eroded sands that have been transported to the area by water and wind. The dunes occur 7 km northeast of the project area.

The subsurface geology consists of rocks from the Mokolian Age. This subsurface geology consists primarily of gneiss and granites of the Namaqua Metamorphic Complex. The gneiss is mainly of pre- to syntectonic biotite-rich augen gneiss.

The local and regional geology was subjected to numerous events of deformation which led to the formation of geological folds, faults, fractures and thrusts. Groundwater flow would be mostly along fractures, faults (secondary porosity) and other geological structures present within the formations as well as through primary porosity in the unconsolidated top cover. No known permanent natural fresh surface water sources exist near the project area. No known boreholes are present within the immediate surroundings of Lüderitz.

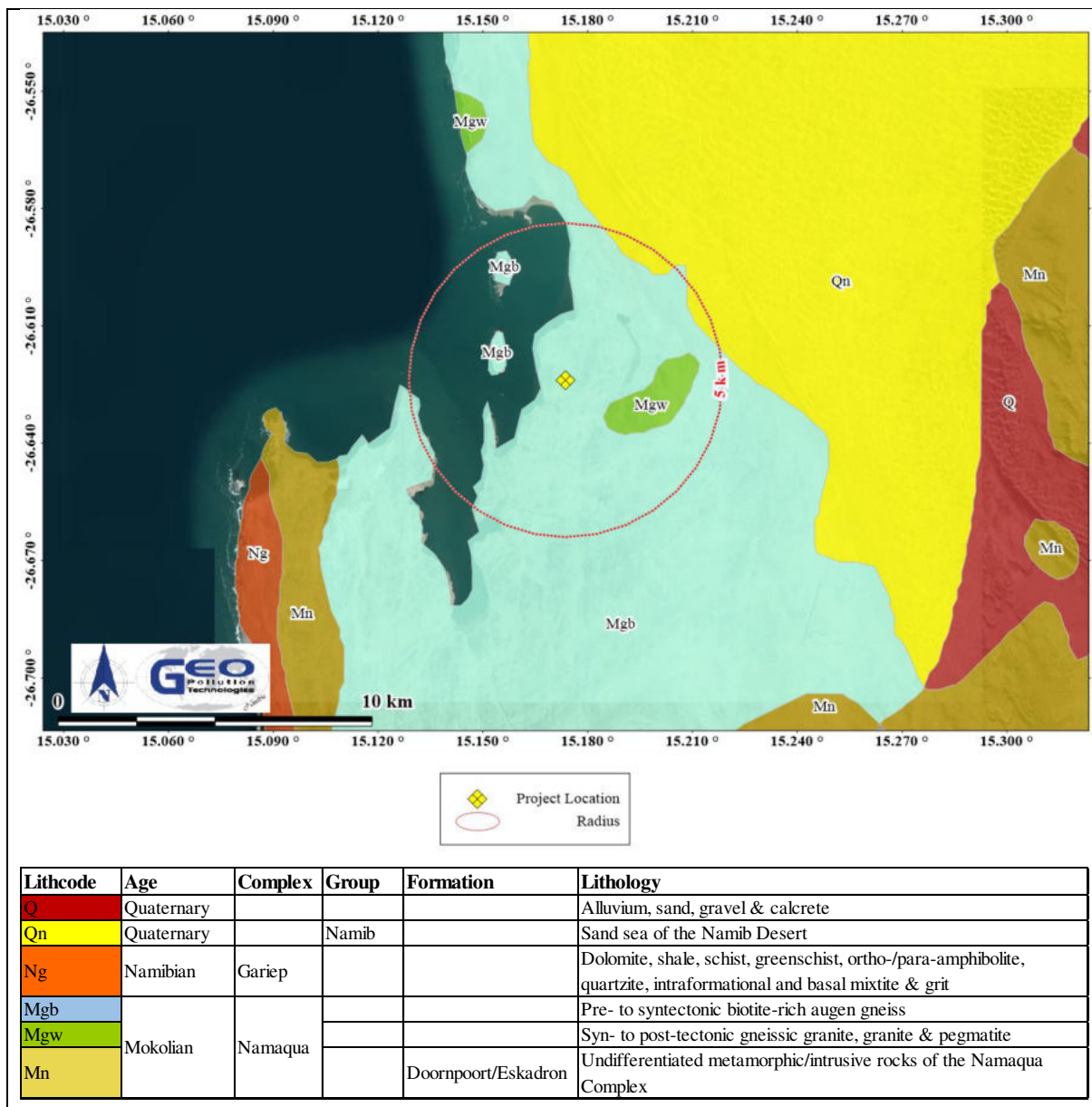


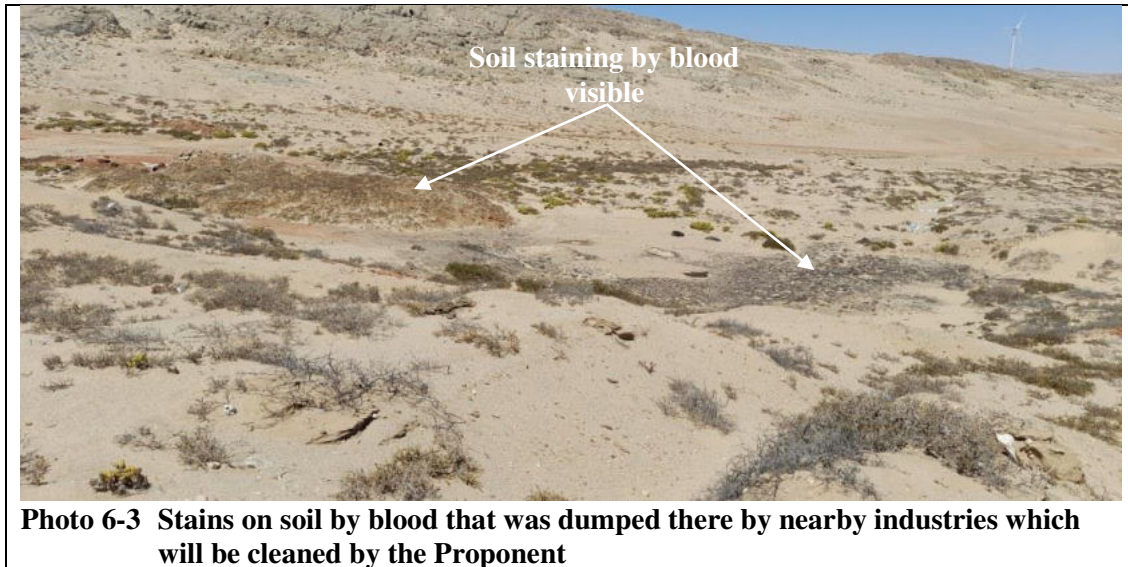
Figure 6-3 Geology map

**Implications and Impacts**

The local geology is not adequate for the placement of a french drain with soak-way. The septic tank connected to the Town Council’s sewer system is thus favourable. Otherwise, the facility is not expected to be impacted as a result of the characteristics of the local geology. Neither is the facility expected to impact on any aspects linked to local geology.

**7.6 SOIL**

Soils around Lüderitz comprise of Lithic Leptosols, Nudilithic Leptosols and Arenosols. The site has a relatively thick layer of course sandy soils. Excavations are visible where such sandy soils have been collected by locals before. Some of the sand shows clear staining by organic waste, mainly blood, presumably disposed there by the nearby seal processing facilities.

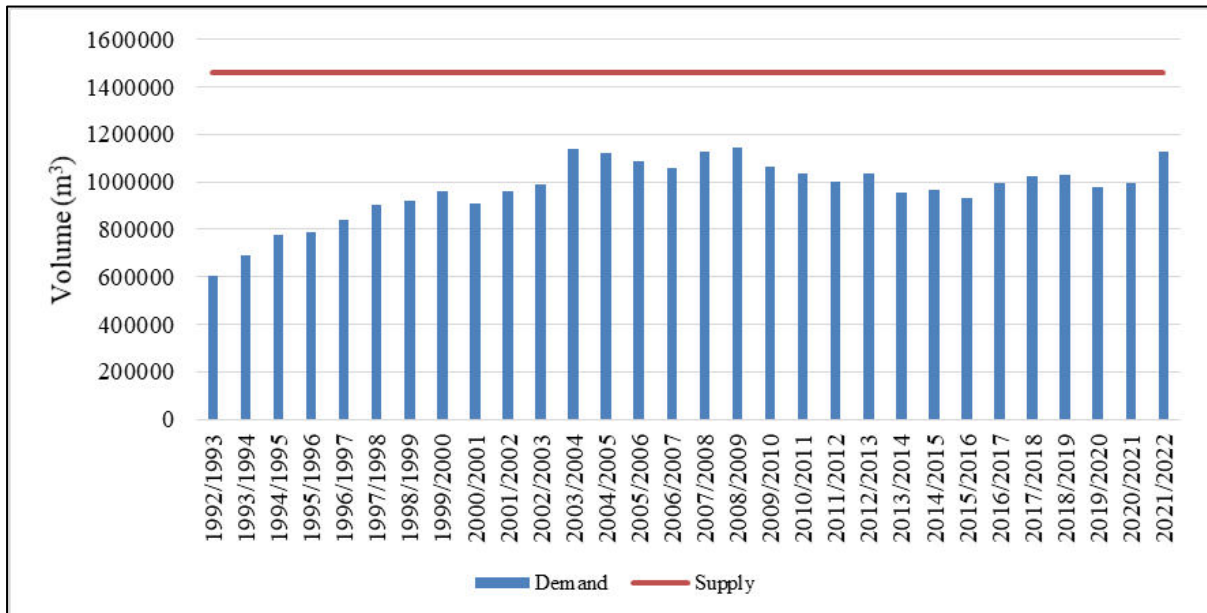


***Implications and Impacts***

The Proponent will remove all polluted soil (dumped by other industries and parties) during development of the erf and this will have a positive impact on the environment.

**7.7 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 2020/2021 the actual volume of water sold by NamWater was 993,101 m<sup>3</sup>. The potential supply of the scheme is 1,460,000 m<sup>3</sup>. Since 2020/2021, no additional industries have been developed which are major consumers of potable water and the potential supply is assumed to be very similar.



**Figure 6-4 Lüderitz potable water supply and demand statistics (Source: Pers. Comm. NamWater)**

***Implications and Impacts***

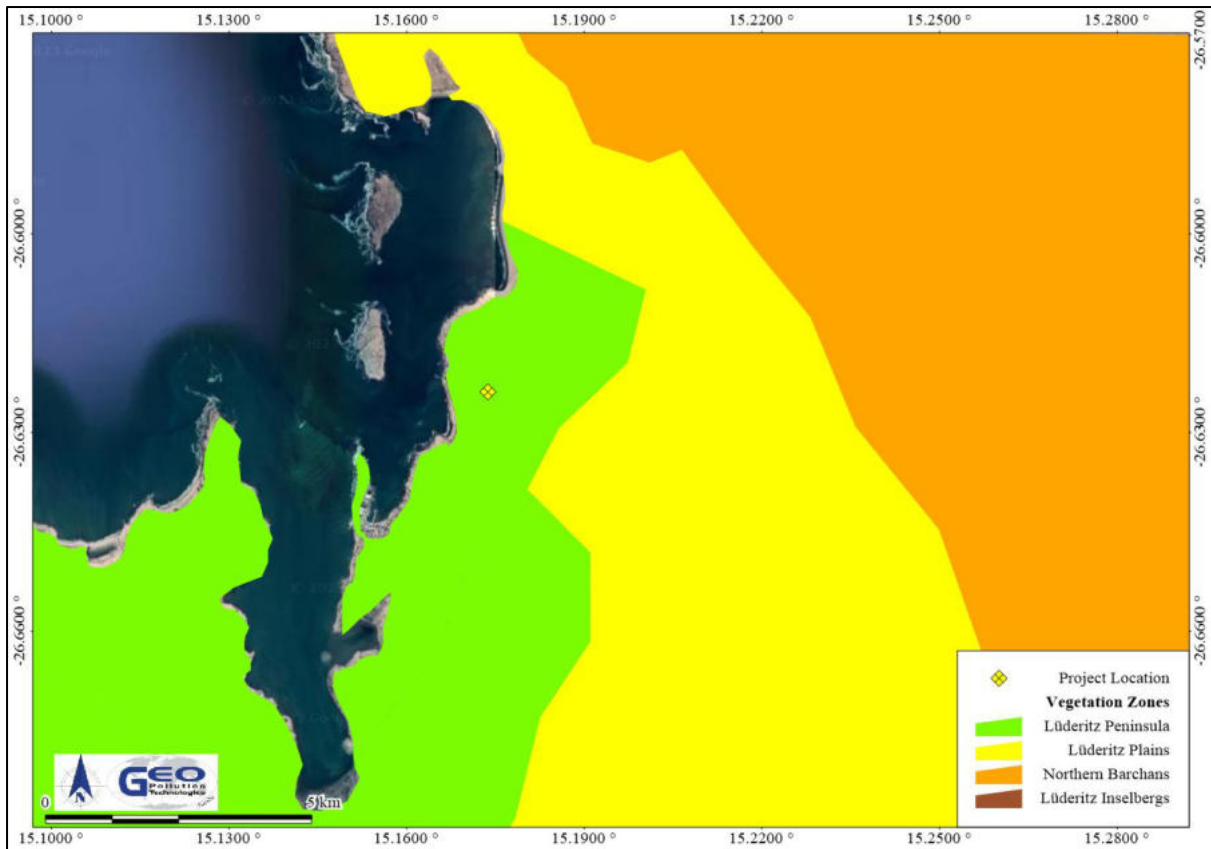
The facility is not expected to impact significantly on the availability of potable water. No boreholes supplying potable water are present nearby.

## 7.8 ECOLOGY

The Lüderitz peninsula is part of the Succulent Karoo Biome with a succulent steppe vegetation type and dwarf shrubland structure (Atlas of Namibia Project, 2002). The Succulent Karoo is a biodiversity hotspot and has the world's richest succulent diversity which is also characterised by high reptile and invertebrate diversity (CEPF, 2005). Hanganabane, and Lüderitz as a whole, is located in the Lüderitz Peninsula vegetation zone (Figure 6-5), but due to the towns development, this vegetation zone is highly degraded within the urban area. This vegetation zone is characteristic of high plant species endemism, of which many are also range restricted. Brown hyena, jackal, springbok, porcupines and oryx are some of the 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 upwelling of nutrients results in a very productive ecosystem. This also includes the abundant growth of algae (micro- and macro- algae).

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, 2022). 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. Declines in food as a result of competition with commercial fisheries has and still remains one of the most serious threats for several of the most threatened coastal seabirds (e.g. African Penguin, Bank Cormorant and Cape Gannet). 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 several other species, typically populate the islands forming part of the Namibian Islands Marine Protected Area (NIMPA), such as North Long Island, South Long Island, Halifax, Ichaboe, Possession, Mercury, etc. The NIMPA was mainly established to, among others, protect threatened seabirds, breeding on the islands, from anthropogenic activity. 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 recent outbreaks of Avian Influenza in 2018/19 near Lüderitz and 2021/22 further north, also takes an additional toll on the African Penguin's long-term survival.



**Figure 6-5 Vegetation zones**

The proposed erf itself is in an area earmarked for development by the Town Council. Vegetation cover is denser on the northern half of the erf and the likelihood for endemics and range restricted species increase as the rocky areas north of the site is approached. The habitat integrity of the site has severely been compromised by not only sand mining, but also historical dumping of various general, hazardous and biological wastes. In addition the site is traversed with an unofficial road which has trampled vegetation.



**Photo 6-4 View of the site from the southeast corner to the northeast**



**Photo 6-5 Old quarry in the northeast corner of the erf**



**Photo 6-6 Site disturbance**



**Photo 6-7 Vegetation on the northern half of the property with signs of sand mining towards the south**



**Photo 6-8 Waste dumped on site**

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

The project may lead to some habitat loss over a small area. However, this area falls within the an area earmarked for development and has previously been disturbed. The development of the erf will see removal and proper disposal of the waste previously discarded on site. Bright lighting may negatively affects birds flying at night and may cause disorientation and collisions. Waste stored on site may attract scavengers such as jackals, domestic dogs, rodents, flies and other pests.

## **7.9 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 mostly 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 2020/2021 period, the main export product via the Port of Lüderitz was manganese ore at 640,288 tons. This is followed by zinc and zinc concentrates at 103,279 tons. The total export tonnage from the Port was 813,565 tons. The Rosh Pinah mines requires sulphur for their refining process and during the 2020/2021 period, sulphur was the main product landed at the Port of Lüderitz at 26,122 tons. The total tonnage of goods landed at the Port was 54,585. Namport initiated the Common User Manganese Export Terminal project which will see manganese exports being ramped up to approximately 2,000,000 tons per annum. The project will make use of offshore transshipment to overcome the port's limitations of shallow water depth.

Tourism plays an important part in the local economy, unfortunately only a very small percentage of tourists visiting Namibia, also visits Lüderitz. Main attractions within the area are; Kolmanskop, Diaz Point and the historic buildings, church and memorials of the town. Boat cruises, to see mainly penguins and seals, operate out of the port. Passenger liners call in the Port of Lüderitz from time to time.

**Table 6-5 Demographic characteristics of Lüderitz Bay, the //Karas Region and Nationally (Namibia Statistics Agency, 2011)**

	Lüderitz	//Karas Region	Namibia
Population (Males)	6,300*	37,400	1,021,912
Population (Females)	6,200*	37,000	1,091,165
Population (Total)	12,500	74,400	2,113,077
Unemployment (15+ years)	28%	33%	34%
Literacy (15+ years)	98%	93%	88%
Education at secondary level (15+ years)	50%	55%	51%

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

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

The abattoir will provide employment to people from the area. Some skills development and training will benefit employees during the construction and operational phases. The project site is not located near to any tourist attractions and will not threaten any income generated for that industry. Construction and operations of the proposed facility will diversify revenue streams and income generation for the locals and national economy through the payment of rates and taxes, social security and salaries.

#### **7.10 ARCHAEOLOGICAL OR CULTURALLY SIGNIFICANT AREAS**

Lüderitz is one of the oldest towns in Namibia and therefore hosts a number of historically important buildings. The town is developed around the port area and thus the historic centre of the town is also situated around the port. A number of buildings have been declared National Monuments in Lüderitz and these include, among others, the Railway Station Building in Bahnhof Street, the German Lutheran Church in Kirch Street, the Deutsche Africa Bank Building and Krabbenhöft und Lampe Building in Bismarck Street. The proposed abattoir site is located far from any cultural and or historical areas.

There are no known cultural, heritage and archaeological aspects on or immediately surrounding the proposed erf of the Proponent. Since the site is relatively close to the shoreline, there may have been some archaeological resources. However, severe disturbance of the site due to sand mining and waste dumping would have seriously compromised any such resources.

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

Although no known archaeological aspects are known of to exist on the erf, the possibility still exists that important artefacts may be uncovered during excavations for development of the facility.

## **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 22 February and 01 March 2023. A site notice was placed at the erf. Interested and affected parties were identified and notified of the project. Notification letters were hand delivered to available neighbours as well as the Town Council. See Appendix A for proof of the public participation processes. No one registered as IAP for the project and no concerns regarding the project were raised during the public consultation phase. During the public participation process, various employees at the neighbouring properties lamented that they are not being paid and that their facilities



are not operational. The main concern was possible employment with a reputable company such as the Proponent, who, is well-known community-business leader.

## **9 MAJOR IDENTIFIED IMPACTS**

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

### **9.1 SOCIO-ECONOMIC IMPACTS**

Once developed, the operations of the abattoir will provide about 20 additional employment opportunities to residents of Lüderitz. This number can increase as the demand for meat to be supplied by the abattoir increase. Training and skills development will takes place throughout operations. A definite economic spinoff will result from both the construction phase and operations, as these will provide a financial injection into the town through the support of various businesses and service providers (mechanical and building contractors, vendors, plant hire, subsistence, etc.) as well as through the payment of salaries and wages to locally employed people. In addition, meat is provided to local shops and local informal markets.

### **9.2 VISUAL IMPACT**

Development of the abattoir will see removal of waste currently on the site and rehabilitation of some scarring as a result of historic sand mining. The character of the facility will be in line with existing developments in the area. Regular maintenance will be required in order to maintain pleasing visual aesthetics.

### **9.3 ENVIRONMENTAL CONTAMINATION**

During the storage and handling of chemicals, fuel, sewage and slaughterhouse wastes at the site, as well as during transportation thereof, contamination of the environment may occur. Such substances may have detrimental ecological effects if released into the environment and may contaminate groundwater. These risks will however be mitigated and prevented by storing them on impenetrable surfaces and strict adherence to all MSDS requirements.

### **9.4 NOISE IMPACTS**

The multifaceted operations of an abattoir involve various systems and machines which will generate noise of various intensity. These include compressors, pressure washers, electrical saws, etc. Maintenance and construction activities may cause temporary elevated noise levels. Noise impacts will be limited to workers and visitors/clients present on site as no other receptors (neighbours) are present near the facility.

### **9.5 DUST/AIR QUALITY**

Dust may be generated during the construction phase. The abattoir will include the handling of potentially fowl smelling materials if waste products are not disposed of timeously and according to accepted standards.

### **9.6 FIRE**

Failing electrical infrastructure, maintenance and construction activities, incorrect chemical and fuel storage, etc., all can result in accidental fires.

### **9.7 ANIMAL WELFARE**

Livestock, and especially cattle, can become very stressed during offloading, handling and prior to entering the abattoir. This will be aggravated where employees are not properly trained in industry accepted standards for handling of livestock at slaughtering facilities.

## **10 ASSESSMENT AND MANAGEMENT OF IMPACTS**

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The purpose of this section is to assess and identify the most pertinent environmental impacts that are expected from the operational, construction (upgrades, maintenance, etc. – see glossary for

“construction”) and potential decommissioning activities of the facility. An EMP based on these identified impacts are also incorporated into this section.

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

Ranking formulas are then calculated as follow:

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

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

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

**Table 10-1 Assessment criteria**

Criteria	Score
<b>Importance of condition (A1) – assessed against 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)**

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

### 10.1 RISK ASSESSMENT AND ENVIRONMENTAL MANAGEMENT PLAN

The EMP provides management options to ensure impacts of the facility is minimised. An EMP is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigation measures might be included if necessary. The environmental management measures are provided in the tables and descriptions below. These management measures should be adhered to during the various phases of the operation of the facility. This section of the report can act as a stand-alone document. All personnel taking part in the operations of the facility should be made aware of the contents in this section, so as to plan the operations accordingly and in an environmentally sound manner.

The objectives of the EMP are:

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

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

As depicted in the tables below, impacts related to the construction and operational phases are expected to mostly be of low to medium significance and can mostly be mitigated to have a low significance. The extent of impacts are mostly site specific to local and are not of a permanent nature. Due to the nature of the surrounding areas, cumulative impacts are possible and include reduced air quality and attraction of pests.

#### 10.1.1 Planning

During the phases of planning for construction, operations and decommissioning of the facility, it is the responsibility of Proponent to ensure they are and remain compliant with all legal requirements. The Proponent must also ensure that all required management measures are in place prior to and during all phases, to ensure potential impacts and risks are minimised. The following actions are recommended for the planning phase and should continue during various other phases of the project:

- ◆ Ensure that all necessary permits from the various ministries, local authorities and any other bodies that governs the construction (maintenance) and operations of the facility are

in place and valid. This includes registration of the abattoir with the Meat Board of Namibia.

- ◆ Ensure all appointed contractors and employees enter into an agreement which includes the EMP. Ensure that the contents of the EMP are understood by the contractors, sub-contractors, employees and all personnel present or who will be present on site.
- ◆ Make provisions to have a health, safety and environmental coordinator to implement the EMP and oversee occupational health and safety as well as general environmental related compliance at the site.
- ◆ Have the following emergency plans, equipment and personnel on site, where reasonable, to deal with all potential emergencies:
  - Risk management / mitigation / EMP/ Emergency Response Plan and HSE Manuals;
  - Adequate protection and indemnity insurance cover for incidents;
  - Comply with the provisions of all relevant safety standards;
  - Procedures, equipment and materials required for emergencies.
- ◆ If one has not already been established, establish and maintain a fund for future ecological restoration of the project site should project activities cease and the site is decommissioned and environmental restoration or pollution remediation is required.
- ◆ Keep records of aspects of construction activities, operations and decommissioning as outlined in the EMP.
- ◆ Comply with conditions accompanying the ECC.
- ◆ Appoint a specialist environmental consultant to update the EIA and EMP and apply for renewal of the environmental clearance certificate prior to expiry, if required.

### 10.1.2 Economic Resilience and Employment

The construction and operations of the abattoir will lead to changes in the way revenue is generated. An increase of skilled and professional labour will take place due to the operations of the facility. Skilled and unskilled labour will be required for the construction (including future maintenance), operations and activities associated with the abattoir. Employees will mainly be sourced locally while skilled labour/contractors may be sourced from other regions. Employment increases individual and societal economic resilience through, not only the payment of wages, but also contributions to social security and fringe benefits. Positive spin-offs include options for diversification of business in town that may provide support services to the abattoir or buy and sell meat products from the abattoir. The optimisation of the site will generate revenue for the local town council in the form of rates and taxes to be paid. Although limited in scale, the facility will provide an avenue for farmers in the //Karas Region to quickly generate some income through selling of livestock to the abattoir.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Contribution to local economy	2	1	2	2	1	10	2	Definite
Daily Operations	Contribution to local economy	2	1	3	2	1	12	2	Definite
Indirect Impacts	Increase in revenue generated	2	1	3	2	1	12	2	Definite

**Desired Outcome:** Contribution to national treasury and remuneration of temporary and permanent employees as per the Labour Act. Continued contributions to social security. Appointment of local contractors. Sourcing of local farmers' livestock.

#### Actions

##### **Enhancement:**

- ◆ The Proponent must employ local Namibians where possible and also use local contractors and suppliers, as far as reasonably practical.
- ◆ Develop and maintain a contractor management program, inclusive of compliance reviews of service level agreements etc.

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

- ◆ Proponent

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

- ◆ Employee records and proof of financial contributions to the various institutions such as social security, receiver of revenue etc. on file.
- ◆ Financial records of payments to the town council for services etc.

### 10.1.3 Skills, Technology and Development

During various phases of construction and operations, training will be provided to a portion of the workforce. Skills are transferred to an unskilled workforce for general tasks. Many technologies required for the development of the facility are new to the local industry, aiding in operational efficiency. Development of people and technology are key to economic development.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Technological development and transfer of skills	2	1	2	2	1	10	2	Probable
Daily Operations	Technological development and transfer of skills	3	1	3	2	1	18	3	Definite
Indirect Impacts	Economic development	3	1	2	3	3	21	3	Definite

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

#### Actions

##### **Enhancement:**

- ◆ Skills development and improvement programs to be made available as identified during performance assessments.

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

- ◆ Proponent
- ◆ Contractors

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

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

#### 10.1.4 Demographic Profile and Community Health

The local community is economically isolated and has a greater vulnerability in terms of economic opportunity. Recent years have seen dynamic changes in industry and related employment (e.g. closure and re-opening of Elisabeth Bay Mine). Such changes typically result in demographic profile fluctuations and community health issues, coupled with an increase in job seekers and further densification of the informal settlement of Lüderitz. Community health is also exposed to factors such as communicable disease like HIV/AIDS and alcoholism/drug abuse. An increase in unemployment in the area may potentially increase the risk of criminal and socially deviant behaviour such as vandalism. The proposed project will contribute to the employment sector and may therefore cumulatively affect the community profile. There is a very low probability that the project will lead to an increase of job seekers in the area, however, the project may contribute to general upliftment of the local community, which, in turn may lead to in-migration and urbanisation. Increased disposable income for 20 families may positively contribute to community health. Although such disposable income may also be applied in socially deviant behaviour such as alcoholism and drug abuse. The overall contribution to community health is however considered to be positive. Abattoir waste may however pose a risk to community health and therefore mitigation measure presented as part of the waste impact should be adhered to.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Increased employment and disposable income	1	2	2	1	1	8	1	Definite
Daily Operations	Increased employment and disposable income	1	2	3	2	2	24	3	Definite
Indirect Impacts	Increased access to resources to a portion of the community.	2	2	3	2	1	24	3	Probable

**Desired Outcome:** General upliftment of the local community and to prevent the occurrence of social ills and prevent the spread of diseases such as HIV/AIDS.

#### **Actions:**

##### **Enhancement:**

- ◆ Adhere to all municipal by-laws relating to environmental health which includes but is not limited to sand and grease traps for the various facilities and sanitation requirements.
- ◆ Ensure sanitation facilities and all related sanitation requirements are available and maintained at the abattoir for all employees.
- ◆ Appointment of reputable contractors.
- ◆ Educational programmes for employees on HIV/AIDs and general upliftment of employees' social status.
- ◆ Adhere to all mitigation and management aspect of Section 10.1.9 and Section 10.1.10.

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

- ◆ Proponent

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

- ◆ Facility inspection sheet for all areas which may present environmental health risks, kept on file.
- ◆ Proof of educational programmes and training conducted on file.

### 10.1.5 Health, Safety and Security

Activities associated with operations and maintenance / construction are reliant on human labour and therefore health and safety risks exist. Activities such as the operation of slaughtering equipment (knives, saws, steel hooks, etc.), cold rooms, vehicles and machinery, as well as handling of hazardous chemicals pose risks to employees.

Potentially harmful *Legionella* bacteria may proliferate in the hot water tanks, plumbing systems and water storage tanks if conditions are favourable and the water systems are not regularly maintained and cleaned. *Legionella* bacteria which, if it becomes airborne in small droplets through for example the ventilation system or through wash water spray, can be inhaled. This may lead to Legionnaires' disease or Pontiac fever in exposed individuals.

Pollution incidents related to chemical, fuel or effluent spillages may pose a health risk. Such a risk also exists in any pathogen contaminated material which may leave or be scavenged from the facility. Security risks will be related to unauthorized entry, theft and sabotage.

The site is located within a peri-urban area and occurrences of wild animals, including venomous species of snakes and scorpions are possible. Encounters with these wild animals, may pose risks to staff.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Physical injuries, exposure to chemicals and criminal activities	1	-2	3	3	1	-14	-2	Probable
Daily Operations	Physical injuries, exposure to chemicals and criminal activities	2	-2	3	3	2	-32	-3	Probable

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

#### Actions

##### **Prevention:**

- ◆ All health and safety standards specified in the Labour Act should be complied with.
- ◆ All industry specific health and safety procedures and regulations applicable should be in place and adhered to.
- ◆ Implement and maintain an integrated health and safety management system, to act as a monitoring and mitigating tool, which includes:
  - first aid kits and training;
  - operational, safe work, first aid and medical procedures;
  - job hazard analysis and standard operating procedures where required;
  - emergency response plans and drills;
  - lockout tagout protection when servicing or maintaining potentially dangerous equipment;
  - housekeeping programmes;
  - MSDS's and signage requirements (PPE, flammable etc.);
  - a medical surveillance program.
- ◆ Selected staff should be trained in first aid and first aid kits must be readily available together with the contact numbers for emergency ambulance and professional medical services.
- ◆ All relevant staff should receive adequate training on hygiene in the working environment and on the correct methods of executing their respective tasks and handling of equipment (specifically dangerous equipment such as electrical saws).



- ◆ Clearly label dangerous and restricted areas as well as dangerous equipment and products. These include the slaughtering area, chemical storage, fuel storage, etc. Clearly indicate compulsory personal protective equipment (PPE) requirements for specific areas.
- ◆ Provide all relevant employees with required and adequate PPE.
- ◆ Identify trip hazards and remove where possible. Where such structures form part of the required operational infrastructure, they should be painted in bright or distinguishable colours.
- ◆ Non-slip floors, especially in slaughtering and meat handling area.
- ◆ Safety procedures and training must be in place for working at heights.
- ◆ Educate employees and have emergency procedures in place for injuries that may occur on site.
- ◆ Staff to be informed on responsible knife handling to not only prevent injuries to themselves, but also to other employees (e.g. when walking with knife in hand).
- ◆ Develop and maintain an infrastructure, machinery and tools register for the abattoir inclusive of a maintenance and inspection schedule, this should include driven machinery, fuel storage, chemical storage, etc.
- ◆ A *Legionella* risk assessment and management plan should be compiled which includes inspection and analysis of water sources potentially containing *Legionella* spp.
- ◆ Ensure legal appointments, of appropriately qualified and trained personnel, are in place for all necessary maintenance and specialised operational activities.
- ◆ The abattoir must have emergency plans to deal with diseased animals that may be found among livestock delivered and kept in lairages prior to slaughtering. This includes the design and planning for isolation pens and disposal of carcasses.
- ◆ Staff must be regularly trained in procedures pertaining to containment of disease outbreaks and destruction and disposal of diseased animals.
- ◆ Staff should be educated / trained on human wildlife conflict management and not to confront wild animals or other potentially venomous / dangerous animals that may be encountered on site.
- ◆ Security procedures and proper security measures must be in place and equipment and goods must be locked away on site or be placed in a way that does not encourage criminal activities (e.g. theft). Lighting used at night should be adequate for security purposes.

**Mitigation:**

- ◆ Report any injuries or incidents to the appropriate manager and take appropriate action (e.g. first aid, transport to medical facility, etc.).
- ◆ Implement mental awareness programs specifically related to the continued slaughtering process' risks to employees' psychological and behavioural patterns including coping mechanisms.

**Responsible Body:**

- ◆ Proponent
- ◆ Contractors

**Data Sources and Monitoring:**

- ◆ Meat Industry Act conditions for the registration of abattoirs.
- ◆ Health and safety management system.
- ◆ Any health, safety and security incidents must be recorded with remedial action taken and actions to prevent future occurrences.
- ◆ Record all health, safety, and security related incidents reported with actions taken to address such incidents. Include dates when training were conducted and when safety equipment and structures were inspected and maintained.

### 10.1.6 Fire

Failing electrical infrastructure, maintenance and construction activities, incorrect chemical storage, etc., can result in accidental fires.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Fire and explosion risk	2	-2	2	2	1	-20	-3	Improbable
Daily Operations	Fire and explosion risk	2	-2	3	2	2	-28	-3	Probable

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

#### Actions:

##### **Prevention:**

- ◆ Prepare a holistic fire protection, prevention and response plan. This plan must include evacuation plans and signage, an emergency response plan and a firefighting plan.
- ◆ Personnel training (safe operational procedures, firefighting, fire prevention and responsible housekeeping practices).
- ◆ Maintain firefighting equipment at approved intervals and keep a maintenance register.
- ◆ Ensure good housekeeping to reduce fire risks associated with accumulated waste materials, etc.
- ◆ No open fires to be allowed on site (e.g. for cooking or heating) except at designated areas and with the necessary approval from management.
- ◆ No fires may be ignited with the intent to burn garden waste on site without managements consent. No general, slaughterhouse or hazardous waste should be burned on site.
- ◆ Ensure all fuel and chemicals are stored and handled according to MSDS and SANS instructions.

##### **Mitigation:**

- ◆ Implement the fire response plan in the event of a fire and notify neighbours in case of potential spreading of a fire to nearby properties.
- ◆ Quick response time by trained staff will limit the spread and impact of fire.

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

- ◆ Proponent
- ◆ Contractors

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

- ◆ In-house fire protection, prevention and response plan which will be approved by the Town Council's Fire Department.
- ◆ Keep record of any fire related incidents and actions taken to ensure that such incidents do not repeat themselves.
- ◆ Maintain fire equipment testing and servicing schedule.

### 10.1.7 Air Quality– Odours and Dust

Some dust will result from construction activities and traffic in the area. No effluent treatment in effluent ponds or similar is planned, thus no odours related to effluent is expected. However, if biological waste, including from the feedlot, is not disposed of timeously, or various structures are not cleaned regularly, odours can result from rotting materials. This may attract pests such as flies.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Earthwork dust. Vehicle emissions.	1	-1	2	2	1	-6	-1	Probable
Daily Operations	Rotting biological waste.	2	-1	3	2	2	-14	-2	Probable

**Desired Outcome:** To prevent any nuisance and reduce emissions.

#### Actions

##### **Prevention:**

- ◆ Good housekeeping is essential not only to stop odours from developing, but also to ensure hygienic conditions.
- ◆ Adopt strategies to reduce odours from the livestock lairages. These can include:
  - Scraping and removing the manure for disposal, then washing down using low volume high pressure water spray as soon as possible after sheep leaves the lairage.
  - Manure should be collected and disposed of daily from the feedlot.
- ◆ The hides store should be well ventilated and hides removed timeously.
- ◆ The skins store area should be well ventilated.

##### **Mitigation:**

- ◆ Dust suppression to be conducted if required during earthworks for construction of the facilities.

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

- ◆ Proponent
- ◆ Contractors

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

- ◆ Keep record of all complaints received and actions taken to address complaints and prevent future occurrences.

### 10.1.8 Noise

The multifaceted operations of an abattoir involve various systems and machines which will generate noise of various intensity. Maintenance and construction activities may cause temporary elevated noise levels. Noise impacts will be limited to workers and visitors present on site as no other receptors (neighbours) are present near the facility.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Excessive noise generated from construction activities – nuisance and hearing loss	2	-1	2	2	1	-10	-2	Definite
Daily Operations	Noise generated from the operational activities – nuisance and hearing loss	2	-1	3	2	1	-12	-2	Definite

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

#### Actions

##### **Prevention:**

- ◆ For various components of the abattoir and surroundings, adhere to the applicable prescribed noise levels as contained in:
  - *Labour Act, 1992: Regulations relating to the health and safety of employees at work*
  - *World Health Organization (WHO) guidelines on maximum noise levels (Guidelines for Community Noise, 1999).*
- ◆ All machinery and vehicles must be regularly serviced and lubricated where applicable to ensure minimal noise production.
- ◆ Where relevant, install mechanical equipment on mounts designed to isolate structure-borne vibration and noise.
- ◆ All ventilation and extractor fans should be noise efficient or fitted with silencers, if required.

##### **Mitigation:**

- ◆ Implement mitigation which may include noise barriers such as screens around noisy equipment and operations and hearing protectors as standard PPE for workers in situations with elevated noise levels.

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

- ◆ Proponent
- ◆ Contractors

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

- ◆ Labour Act standards and WHO Guidelines.
- ◆ Report on complaints received regarding noise and actions taken to address complaints and prevent future occurrences.

### 10.1.9 Liquid Waste–Industrial Waste Water

Industrial waste water to be managed on site consists of wash water from the slaughtering, processing and cold storage areas, wash water from the lairages and truck washing area, blood, excrement, cleaning chemicals, and slaughterhouse wastes. If the liquid waste stream is not managed effectively (e.g. preventing excessive blood from entering) it can have negative impacts on the Town Council’s effluent treatment ponds’ efficiency. The overall contribution of effluent to the Town Council’s treatment plant is expected to be low.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Daily Operations	Impacts on effluent treatment ponds of the Town Council	2	-2	3	2	2	-28	-3	Probable

**Desired Outcome:** To reduce the amount of industrial waste water produced, and to adequately remove solids, fat and blood from waste water to prevent impacts on the Town Council’s effluent treatment facilities.

#### Actions

##### **Prevention:**

- ◆ Develop and implement an effluent management plan, this should include waste water reduction initiatives and regular inspection and maintenance of wastewater reticulation infrastructure.
- ◆ All foreign material must be collected and prevented from entering the wastewater stream.
- ◆ Regular monitoring and periodic cleaning of sumps and screens.
- ◆ No effluent may be released (accidentally or purposefully) into the environment.
- ◆ Ensure the septic tank is efficient in pre-treatment of waste water entering the sewers and ultimately the effluent treatment ponds of the Town Council.
- ◆ Construction and operations of the septic tank should be according to Department of Water Affairs and Forestry, Code of Practice: Volume 1, Septic tank Systems.

##### **Mitigation:**

- ◆ To reduce effluent volumes the following should be considered:
  - Operators should be trained in water conservation and water usage monitoring.
  - Use high pressure low volume water hoses to minimise the amount of water required for cleaning operational areas.
  - Water used for general washing must be pressurized.
  - Cold water must be used to clean surfaces soiled with blood (except periodic deep cleaning at the end of the day) as the use of hot water causes congealing of the blood, making cleaning more difficult, thus resulting in unnecessary wastage of water.
  - All hoses must be fitted with self-closing nozzles to prevent wastage when not in use. Where the hoses are frequently used, pistol grips must be used.
  - All hoses, fittings and connections must be leak free and replaced if leaks are detected.
  - Slaughterhouse waste and manure in the lairages can be dry swept and removed prior to the areas being washed.
- ◆ Biodegradable cleaning materials should be investigated to limit impacts on the effluent ponds and the environment.

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

- ◆ Proponent
- ◆ Contractors

**Data Sources and Monitoring:**

- ◆ Department of Water Affairs and Forestry, Code of Practice: Volume 1, Septic tank Systems.
- ◆ Maintenance schedule of the wastewater reticulation system should be kept on file.

### 10.1.10 Solid Waste Production

Solid waste can be dung from the lairages, slaughterhouse wastes or it can be waste originating from kitchens, offices, etc. Construction and maintenance waste can building rubble and discarded or obsolete equipment. Some wastes can be dangerous / hazardous such as diseased animal carcasses, obsolete or expired chemicals, contaminated fuels or chemicals, etc.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Excessive waste production, littering, illegal dumping, contaminated materials	1	-2	2	2	1	-10	-2	Definite
Daily Operations	Excessive waste production, littering, contaminated materials	1	-2	3	2	2	-14	-2	Definite

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

#### Actions

##### **Prevention:**

- ◆ Develop and implement a waste management program, this should include waste reduction and recycling initiatives and regular inspection and maintenance of waste storage and disposal areas.
- ◆ All employees should be educated on proper waste handling and disposal and importantly on the segregation of waste according to the different waste streams and their appropriate disposal locations.
- ◆ Ensure adequate temporary waste storage facilities are available that prevents waste being blown away by wind and prevent scavenging (human and non-human) of waste.
- ◆ Biological waste must be collected timeously to ensure hygienic conditions and that such wastes do not accumulate on site and attract vermin.
- ◆ All hazardous materials, including chemical container disposal, should be conducted as per their MSDS instructions. All hazardous waste chemicals containers requiring a triple rinse system for disposal purposes, should have the rinse water collected in a separate system and not disposed of into the oxidation ponds unless approved as per a chemical and biological assessment of the ponds and related interaction with the hazardous chemicals.
- ◆ Should any buildings or structures be decommissioned, all waste and infrastructure should be disposed of at a pre-approved landfill site.

##### **Mitigation:**

- ◆ Waste should be disposed of regularly.
- ◆ Liaise with the local authority regarding waste and handling of hazardous waste.

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

- ◆ Proponent
- ◆ Contractors

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

- ◆ A register of hazardous waste disposal should be kept. This should include type of waste, volume as well as disposal method/facility.
- ◆ Any complaints received regarding waste should be recorded with notes on action taken.

### 10.1.11 Ecosystem and Biodiversity Impact

The proposed erf is located in a previously undeveloped area which has seen significant human impact through sand collection and disposal of waste on site. Some natural vegetation however does occur on site, especially on the northern portion of the erf. Such vegetation will be destroyed where infrastructure is developed.

Infrastructure may provide opportunities for animals to take refuge or build nests. Vermin may be attracted if waste is not discarded timeously.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Impact on fauna and flora. Loss of biodiversity	2	-2	3	3	2	-32	-3	Definite
Daily Operations	Creation of habitat for animals and attraction of vermin	2	-1	3	2	2	-14	-2	Probable

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

#### Actions.

##### **Prevention:**

- ◆ Design the facility to avoid the northern portion of the erf and consider developing in the previously disturbed areas (sand mining areas) as far as is practically possible.
- ◆ Educate all contracted and permanent employees on the value of biodiversity.
- ◆ Disciplinary actions to be taken against all employees failing to comply with contractual conditions related to poaching and the environment.
- ◆ All fuel and chemical storage to be conducted as per relevant SANS or MSDS instructions to prevent ecological damage.
- ◆ Birds should be deterred from nesting on infrastructure.

##### **Mitigation:**

- ◆ Mitigation measures related to waste handling and the prevention of groundwater, surface water and soil contamination should limit ecosystem and biodiversity impacts.

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

- ◆ Proponent

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

- ◆ All information of extraordinary ecological sightings to be recorded.



### 10.1.12 Groundwater and Soil Contamination

Existing soil contamination on site, will have to be cleared prior to the Proponent embarking on the project and obtaining the erf. It is therefore considered that the construction phase of the project will be an improvement of the soil conditions through the removal of contaminated and hazardous materials on site. Although no groundwater is utilised in the area, contamination of soil and groundwater during the operational phase may still occur. Such contamination may result from untreated or partially treated effluent (sewage and industrial), biological waste (e.g. wash water from lairages, chemicals or fuels from the abattoir), seep into the soil and ultimately the groundwater. Similarly, holding pen waste may contaminate the soil if not cleaned and removed regularly.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Contamination from hazardous material spillages and leaks	2	-1	2	2	1	-10	-2	Probable
Daily Operations	Contamination from hazardous material spillages and leaks	2	-1	3	2	1	-12	-2	Probable

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

#### Actions

##### **Prevention:**

- ◆ See the MSDS available from suppliers for disposal of contaminated products and empty containers. All hazardous waste chemicals containers, requiring a triple rinse system for disposal purposes, should have the rinse water collected in a separate system and not disposed of into the effluent treatment stream.
- ◆ Proper training of employees and of operators of machinery and vehicles must be conducted on a regular basis (fuel and chemical handling, spill detection, spill control).
- ◆ All machinery and vehicles should be properly maintained to be in a good working condition during operations.
- ◆ Employ drip trays and spill kits when servicing / repairs of equipment are needed.
- ◆ Standard operating procedures should be developed and implemented for the use of hazardous materials.
- ◆ All hazardous chemical should be stored in a sufficiently bunded area and a register maintained of all such chemicals and their volumes.
- ◆ Fuel storage and handling according to SANS standards including storing fuel in a closed bunded area and the use of drip trays or spill proof surfaces where fuel is handled.
- ◆ All biological and liquid wastes should be prevented from entering the environment and wash water at the lairages must be handled as waste that may not be allowed to flow into the environment.

##### **Mitigation:**

- ◆ Spill clean-up means must be readily available on site as per the relevant MSDS for all chemicals and fuels.
- ◆ Any fuel spillage of more than 200 litres must be reported to the Ministry of Mines and Energy.

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

- ◆ Proponent
- ◆ Contractors

**Data Sources and Monitoring:**

- ◆ Keep record of all spills or leakages of hazardous or polluting substances, inclusive of date and duration of spill, product spilled, volume of spill, remedial action taken.

### 10.1.13 Water Supply

Water usage is minimal between slaughtering events, but larger volumes are required during slaughtering. Water use is however not expected to impact on any nearby users, but water saving remains paramount in a dry country like Namibia. Interruptions in freshwater supply to the abattoir will negatively impact operations of the abattoir. Poor quality water may have health impacts.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Daily Operations	Water wastage and interruptions in supply	2	-1	3	2	2	-14	-2	Probable

**Desired Outcome:** To utilise water sustainability and ensure an adequate supply of water.

#### **Actions**

##### **Prevention:**

- ◆ The abattoir must have suitable water storage on site to ensure a sufficient volume of water for animal watering and cleaning purposes are available in the eventuality that a water supply interruption occurs.
- ◆ The water must be clean, potable and free of suspended material and substances which could put health at risk.

##### **Mitigation:**

- ◆ Develop and implement a water management programme, which includes water use reduction measures, monitoring of water utilised and consumption volumes and regular inspections and maintenance of the water reticulation system.
- ◆ Periodic testing of water from the onsite water reservoir to determine quality and microbial proliferation problems.
- ◆ Should the water storage tank be contaminated, sterilisation, flushing and cleaning of the tank should be performed as appropriate.

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

- ◆ Proponent

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

- ◆ Meat Industry Act conditions for the registration of abattoirs.
- ◆ Record water use statics and water quality monitoring results.

#### 10.1.14 Visual Impact

This impact is not only associated with the aesthetics of the site, but also the structural integrity of infrastructure. The construction of the facility will have a positive visual impact in terms of removal of existing litter discarded on site being removed by the Proponent. The facility will be visually in line with existing facilities in the industrial area. Operations will require cleaning of the entire slaughtering facility after each slaughtering event and regular waste disposal.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Aesthetic appearance and integrity of the site	1	-1	2	2	2	-6	-1	Probable
Daily Operations	Aesthetic appearance and integrity of the site	1	1	2	2	2	6	1	Definite

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

#### Actions

##### Prevention:

- ◆ Regular waste disposal and clearing of wastes on the entire premises.
- ◆ Regular waste disposal, good housekeeping and routine maintenance on infrastructure will ensure that the longevity of structures is maximised and a low visual impact is maintained.
- ◆ The minimum lighting required to ensure adequate security and a safe environment should be used at night and it must be directed downwards as far as is practically possible to not become a nuisance to current and future neighbours.

##### Responsible Body:

- ◆ Proponent
- ◆ Contractors

##### Data Sources and Monitoring:

- ◆ Keep record of complaints received and actions taken.

### 10.1.15 Traffic

Operations of the abattoir will increase traffic flow to the site and increase the chance of potential incidents and accidents around the abattoir. The impact is expected to be limited.

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	Delivery of equipment and building supplies	1	-1	2	2	1	-5	-1	Probable
Daily Operations	Increase traffic, road wear and tear and accidents	2	-1	3	2	1	-12	-2	Definite

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

#### **Actions**

##### **Prevention:**

- ◆ All vehicles owned by the Proponent to operate within the Traffic and Transport Act regulations, specifically also in the terms of roadworthiness.
- ◆ Trucks delivering or collecting goods should not be allowed to obstruct any traffic in surrounding areas.

##### **Mitigation:**

- ◆ If any traffic impacts are expected, traffic management should be performed to prevent these.

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

- ◆ Proponent

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

- ◆ The Road Traffic and Transport Regulations, 2001
- ◆ Record complaints received regarding traffic (directly associated with the abattoir) with action taken to prevent impacts from repeating itself.

### 10.1.16 Cumulative Impact

Possible cumulative impacts associated with the operational phase and any maintenance / construction activities are mainly linked to employment and revenue generation (positive impact) and pollution, water demand, traffic and greenhouse gas emissions (negative impacts).

Project Activity / Resource	Nature (Status)	(A1) Importance	(A2) Magnitude	(B1) Permanence	(B2) Reversibility	(B3) Cumulative	Environmental Classification	Class Value	Probability
Construction	The build-up of minor impacts to become more significant	2	-1	2	2	1	10	-2	Probable
Daily Operations	The build-up of minor impacts to become more significant	2	-1	3	2	1	-12	-2	Probable

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

#### Actions

##### **Mitigation:**

- ◆ Addressing each of the individual impacts as discussed and recommended in the EMP would reduce the cumulative impact.

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

- ◆ Proponent

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

- ◆ Review all records kept in order to detect any new or re-occurring impacts or problems (cumulative impacts) and reconsider existing prevention and mitigation measures where cumulative impacts are present.

## 10.2 DECOMMISSIONING AND REHABILITATION

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

## 11 CONCLUSION

Establishment of the erf and the subsequent construction and operations of the abattoir will have a positive impact on the economy of Lüderitz. Employment will be provided to the local workforce and training and skills transfer will take place. Various business will be supported through outsourcing of specific activities (goods and services delivery), during both the construction and operational phases.

Regulations related to abattoirs as prescribed by Namibian law and the meat industry, must be followed during the planning, construction and operations of the facility. The necessary permits and approvals must be obtained from the relevant ministries and authorities. All hazardous substances should be handled and stored according to MSDS requirements which may include storage in bunded areas with sufficient spill containment infrastructure and segregation of incompatible products. Noise pollution should at all times meet the prescribed Labour Act and WHO requirements to prevent hearing loss and minimise nuisance. Fire prevention should be adequate, and health and safety regulations should be adhered to in accordance with the regulations pertaining to relevant laws and internationally accepted standards of operation. Any waste produced must be removed from site and disposed of at an appropriate facility or re-used or recycled where possible. Hazardous waste (including biological waste) must be disposed of at an approved hazardous waste disposal site. In terms of site layout, the northern portion (areas with higher vegetation presence) should be avoided. Instead, the facilities should, where possible, be placed in previously disturbed and lower laying areas.

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

Based on the findings of this report it is recommended that an ECC be granted for both the establishment of the erf as well as the future construction and operations of the abattoir and related infrastructure. The ECC should be granted on condition that the Proponent adheres to the EMP for all phases of the development.

## 12 REFERENCES

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





Notified IAPs

IAPs Notified by Hand Delivered Letter



**Public Participation Notification: Environmental Assessment**  
Abattoir and Feedlot, Lüderitz

Name & Surname	Organisation/Address	Tel / Mobile	Email	Signature
Silvanus Lewis	Lüderitz Town Council (063		Privacy Block	
Anastasia Lindungo	Seed Factory (Sealdag) 081			
Xuecheng Hou	Seed Factory 081			
Metel Victor	Ukumwe Seal P.			
Mr de Waal	Fiscor Invest 067			
Anna de Waal	TA CA Port 081			

Geo Pollution Technologies  
Abattoir and Feedlot, Lüderitz, Benguella Wealth Farming CC

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February 2023

## 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: The Chief Executive Officer  
Lüderitz Town Council  
P.O Box 19  
Lüderitz

Lüderitz Town Council  
Lüderitz

20 February 2023

2023 -02- 23

Tel: 063 207 800 / 063 207 801

Fax: 063 202 971 / 063 202 047

P.O. Box 19, Lüderitz

Dear Sir

Re: Environmental Scoping Assessment and Environmental Management Plan for the Construction and Operations of an Abattoir and Feedlot, Lüderitz.

In terms of the Environmental Management Act (No. 7 of 2007) (EMA) and the Environmental Impact Assessment Regulations (Government Notice No. 30 of 2012), notice is hereby given to all potential interested and/or affected parties (IAPs) that an application will be made to the Environmental Commissioner for an environmental clearance certificate (ECC) for the following project:

**Project:** Construction and Operations of an Abattoir and Feedlot, Lüderitz.

**Proponent:** Benguella Wealth Farming CC

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

Benguella Wealth Farming CC (the Proponent) plans to construct and operate an abattoir and feedlot on an erf to be established on the Remainder of Portion B of Lüderitz Town and Townlands No. 11 in the //Karas Region. As part of the planning phase of the project, the erf has to be established and zoned according to the proposed future land use. The principle operational activities will include the receipt of livestock; slaughtering of livestock; portioning and processing of carcasses, butchery operations and cold storage of all meat products. Meat will be sold at an onsite shop (the butchery) and shipped or delivered to various clients or shops in town. Initial throughput is estimated to be six heads of cattle and 20 sheep per week. Office and human resources administration will be ongoing throughout operations. This will include regular cleaning and disinfection of the facility, quality control, waste disposal, etc.

Geo Pollution Technologies (Pty) Ltd was requested to conduct an environmental assessment for the project. The assessment is required in terms of the EMA and will be conducted according to the EMA regulations as published in 2012. As part of the assessment, we consult with IAPs who are invited to register with the environmental consultant and to receive further documentation and communication regarding the project. By registering, IAPs will be given an opportunity to provide input that will be considered in the drafting of the environmental assessment report and its associated management plan.

Registration details and comments should reach Geo Pollution Technologies by 10 March 2023. To register, please contact: Email: [benguella@thenamib.com](mailto:benguella@thenamib.com) Fax: 088-62-6368

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

Thank you in advance.

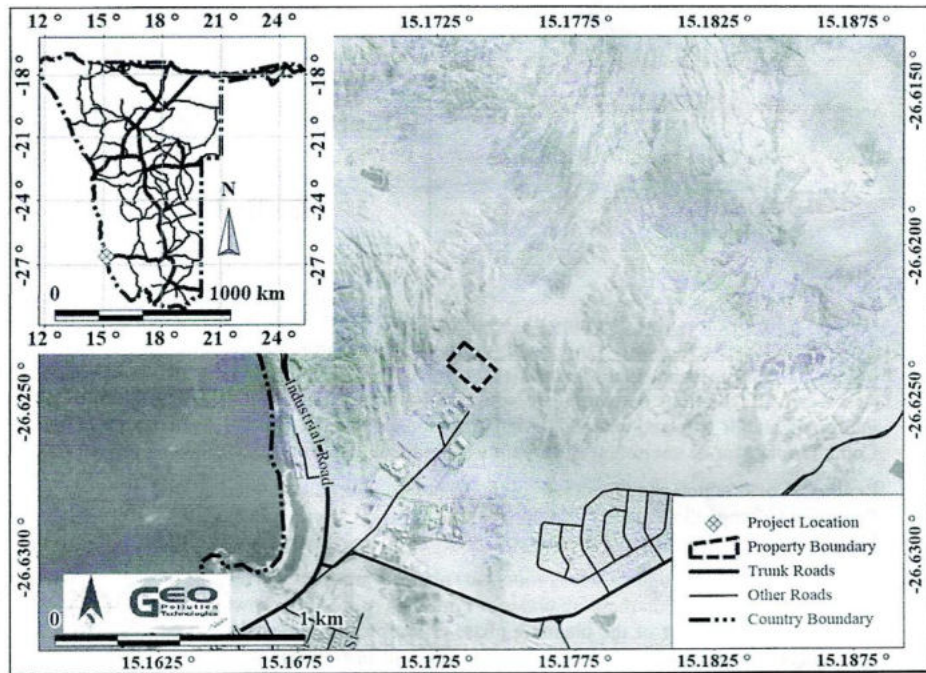
Sincerely,

**Geo Pollution Technologies**

André Faul  
Environmental Scientist

Directors:

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



Project Location

## NEWS IN SHORT

### Services survey starts for Tsumeb's Kuvukiland

Tsumeb's municipality and town council yesterday started with surveys of Kuvukiland - one of the town's oldest informal settlements, which still does not have municipal services.

The aim is, among other things, the mapping, planning and formalisation of the settlement, where it is estimated that more than 10 000 people live. This also means that people may be relocated.

Spokesperson Stella Imalwa-Nangolo said this follows a meeting held last week with residents of the settlement, during which the town council spoke about its plans and programmes for the area in the coming year while residents took the opportunity to also provide their input.

Kuvukiland, which is located on the west side of the northern town, was established in about 2009, but does not yet have any basic services, she said.

Imalwa-Nangolo added that this is a joint project between the municipality, the town council, the Namibia Housing Action Group and the Shack Dwellers Association of Namibia.

- ELVIRA HATTINGH

### 'Sick' woman allegedly rapes teen



Police in the Oshana Region on Monday arrested a 55-year-old woman for allegedly raping a teenage boy on 14 February at Oshekashaka village. The incident was only reported this week.

It is alleged that the 18-year-old victim, who is a resident of Okayeje village, went to visit his 55-year-old female cousin, who was unwell at home.

Sergeant Frieda Shikole said after arriving at the suspect's house, the victim was allegedly invited into her bedroom.

"She locked the door and started touching the complainant on his penis. She asked the complainant to have sex with her. She allegedly grabbed the complainant and pushed him onto the bed. She undressed the complainant and forced him to have sexual intercourse with her without his consent," a police report stated.

It is not clear what illness the woman was suffering from at the time.

She has been arrested and is expected to appear in court this week. Police investigations into the matter continue.

- TUYEIMO HAIDULA

## • NASA ACCUSES INSTITUTION OF SCAMMING STUDENTS

# Nursing school closure: Owner blames 'tribalist' community

**Following the closure, some of the students attempted to register at another nursing school, but were told that their qualifications are not accredited.**

KENYA KAMBOWE  
RUNDU

The owner of a nursing school says he had no choice but to close the doors to two satellite campuses in Rundu and Divundu because he could no longer tolerate the discrimination, insults and tribal attacks from community members.

This while students have accused the institution of scamming them, adding that they were lured into registering with scholarships.

Zekka George, the owner of Nursing Training Institute of Technology (NTIT), said he never expected that 33 years after independence, fellow Namibians would base their treatment of him on his tribe.

"The tribalism, discrimination, insults and victimisation we suffered from last year to the beginning of this year from the Kavango regions... I was surprised and shocked to hear that a person can attack you in an independent Namibia. A person of the same colour can attack you because you are not a Rukavango-speaking person," he said.

"Why must we go to that level when we say 'One Namibia, One Nation? Right now, even if I wanted to reopen that building, it would be a waste of time."

The school's main campus in Windhoek remains operational.

### In limbo

About 30 of the 80 students registered with the institution's Rundu campus were left in limbo yesterday after a notice on social media announced that NTIT would no



**DISGRUNTLED:** NTIT students have been left in limbo after the institution's Rundu and Divundu satellite campuses closed. PHOTO: KENYA KAMBOWE

longer be operating in the riverside town.

The Divundu campus, which closed last year, had 66 students enrolled.

During a demonstration led by the National African Students Association (NASA), the students expressed their disappointment in the school no longer operating in the northern towns.

They added that they were desperate to register with NTIT because they could not qualify to register with other tertiary institutions.

"I was doing nothing, but a friend of mine told me about NTIT and I managed to convince my parents to give me the money so that I can register and get a qualification," a student said.

Following the campus closure, some of the students attempted to register at another nursing school in Rundu, but were told that their qual-

ifications are not accredited.

They are now demanding that NTIT refund them.

### NASA to blame

According to George, all was going well prior to the involvement of NASA.

He accused the association of convincing students not to pay their tuition fees, which resulted in some of them not returning to school.

"If you look at the group from NASA, they are studying at the University of Namibia, paying the fees that they need to pay while some are employed already, but they are the ones telling others not to pay and attend classes. How does that benefit the students they claim to represent?"

He said while they wait for the dust to settle, they will engage the students on how they can complete their studies.

He added that short courses can be concluded online on distance mode, while certificate and diploma courses cannot be done on a part-time basis.

### 'Scam'

In a statement, NASA said NTIT is a 'scam' which deceived students to register with promises of scholarships.

It added that the institution does not provide practical training and makes use of unqualified lecturers. The association has given NTIT until Friday to engage it, or it will approach the relevant ministry or the courts.

NTIT offers short 'introduction to nursing' courses, while it is in the process of being recognised by the Health Professions Councils of Namibia in order to offer a certificate in enrolled nursing and midwifery, according to the owner.

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## ONGWEDIVA TO TACKLE INFORMAL TRADERS

TUYEIMO HAIDULA  
ONGWEDIVA

**Come 1 March, the Ongwediva town council will no longer allow informal traders to sell goods at prohibited spots. Non-compliers will face a fine of N\$2 000, six months' imprisonment or both.**

According to Ongwediva spokesperson Jackson Muma, council kicked off an awareness campaign at the beginning of this month to urge informal traders to make necessary arrangements to formalise their operations.

He added that council does not have an idea of how many traders' operations will be shut down once they start implementing this new regulation.

"We don't have a database yet. The regulation will enable council to register them to have an accu-

rate number. The punishment, as stipulated in the regulation, is N\$2 000, six months' imprisonment or both. However, council is in the process of acquiring a fine list from the magistrate for minor offences," he said.

Muma said they have engaged stakeholders to assist council, including the Namibian Police, business representatives, management of malls and community activists.

### Approved trading sites

Popular spots in and around Ongwediva - such as the Marula trees along Kalombo Kuutondokwa Street and between Bennies Park and Maroela Mall as well as the trees at the entrance of Okandjengedi Primary School and the area next to Chicco Mall - have been designated as trading sites, while the council seeks to

establish formal sites for informal traders.

Meanwhile, the town council has also allocated every Tuesday and Thursday to street vendors to trade at the open market at a cost of N\$10 per person per day.

Muma said informal traders will be expected to register their names with the council on a date to be announced and will be issued with the necessary documentation.

This, he said, will assist them to better plan for future.

Foreign traders from neighbouring countries who intend to trade in Ongwediva are expected to carry trading permits from relevant offices. Local traders will be expected to carry trading identification documents whenever they conduct business, he said.

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# Teacher starts own business to boost income

**Enzo Amuele**  
Journalist  
enzo@epi.com.na

Beauty salon owner and educator Veronica Ndemwoongela (30) founded her business to ensure she could provide for her family.

"Being the breadwinner at home, having children of your own, and having to take care of your siblings and their kids, I had no option but to start a business to supplement my income," Ndemwoongela, who is based in Eenhana and still works as a full-time teacher, said.

Ndemwoongela opened her business – Vee's Lashes and Smooth Secrets – one year ago.

The entrepreneur, who is a teacher by profession, provides clients with an array of beauty products and services, including lashes, waxing, massage, and micro-



**CREATIVE.** Veronica Ndemwoongela opened Vee's Lashes and Smooth Secrets one year ago to supplement her teaching income.

blading, among others.

**Aiming to grow**

As one of the first of its kind in Eenhana, Ndemwoongela has to constantly advertise her business and engage clients to ensure that it grows.

"People are happy about the initiative. So far, all I have received from my clients is positive and encouraging feedback. It's amazing; I couldn't be happier," Ndemwoongela remarked. One of the positive aspects

of her work is meeting new people. She says she has established great relationships and beautiful bonds with most of her clients.

"Things have become lighter in terms of finances; now I am able to support my sisters at higher learning institutions and still be able to take care of home. I couldn't be more grateful," she said.

Ndemwoongela acknowledged that although some days may go by without her seeing a client, that does not stop her from perfecting her art and doing research to stay up-to-date on the latest trends and products.

**Hard work**

She says her daily routine is "not a walk in the park," but adds that while her days are long as she juggles teaching and her business, she enjoys what she does.

"During weekends, I attend to my business from 7:30 until 10:00 at night. I



**BUSINESS OWNER:** Veronica Ndemwoongela. PHOTOS: CONTRIBUTED

love what I do, and working like this is not affecting me at all," she said.

Ndemwoongela advised fellow business owners to stay focused, know what they want, and stick to their goals. "Do not eat up your in-

come; rather, re-invest it into the business and have it grow. Never forget the reason why you started, but most importantly, provide customer service and be good to all your clients," she concluded.

# Flood refugees need more help

**Tuyemo Haidula**  
Journalist  
tuyemo@ev.com.na

Flood refugees living at the Ehenye flood relocation centre need immediate assistance ranging from food, shelter, water, and medicine, in addition to long-term recovery assistance.

Among those forced to flee their homes are seven pregnant women and 10 breastfeeding mothers.

When the floods arrived in northern Namibia, Ohangwena Region was the hard-

est hit.

More than 2 100 people have been affected overall in the Oshana and Ohangwena regions, with 111 families whose homes were completely submerged by water and 327 families whose homes were partially submerged.

Of the total 2 190 persons impacted by the floods, 300 people are from Oshana and 1 890 people are from the Ohangwena Region.

**Flushed away**

Statistics from the Ohangwena regional council show that 14 households were relocated to higher grounds, while



**REACHING OUT.** In January, Prime Minister Saara Kuugongelwa-Anadhila visited some of the affected families in the Ohangwena Region. PHOTOS: TUYEMO HAIDULA

in Oshakati, the town council relocated 48 households consisting of 237 persons to 17 tents.

Jason limbangu, the head of the disaster risk management centre, said they relocated some vulnerable peo-

ple who require extra care, including 10 breastfeeding mothers, three elderly people, and five people with disabilities.

limbangu said while the council has erected three showers, six toilets, provid-



**HELP NEEDED:** Several communities are struggling in the aftermath of widespread floods.

ed electricity, and one water point, the relocated groups have other needs after losing some of their belongings during the floods.

As it stands, the centre is home to 63 children aged 0-5 years, 68 children aged

6-18, and 106 adults.

**Provide help**

Meanwhile, the Namibian government has set aside N\$72 million for flood relief.

Communication minister Peva Mushelenga said Cabinet has approved the flood relief programme funding.

Mushelenga said the devastating impacts are likely to be felt by these families for the next six months until the next harvesting season.

Omusati governor Erginus Endjala said as the region prepares for independence celebrations, they still have to cater for the flood affected families.

Endjala said the flood situation may change if substantial rainfall continues to fall in the Cuvvelai catchment area, both in Angola and Namibia.

"Community members and schoolchildren in the flood-prone areas should take the necessary preventive measures and are advised to use alternative routes when crossing flooded areas," he said.

He urged traditional authorities not to allocate land in flood-prone areas.

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## Press Notice: Die Republiek 22 Februarie en 01 March 2023

Woensdag 22 Februarie 2023

Republiek

NUUS 3

&gt;&gt; Mynmaatskappy het 30 dae om te verduidelik

# Prokureur-generaal by litium-debakel betrek

Die wyse waarop Xingfeng sy mynlicensie bekom het, word bevraagteken.

## Nuusredaksie

Die ministerie van myne en energie het die prokureur-generaal, Festus Mbandaka, om regsadvies genader oor die wyse waarop die Chinese mynmaatskappy Xingfeng Investments Namibia sy lisensie bekom het om litium naby Uis in die Erongostreek te ontgin.

Die ministerie se voorlopige ondersoek het glo bevind dat die maatskappy 'n wanvoorstelling van feite in sy aansoek gegee het – iets wat minister Tom Alweendo na bewering probeer regstel.

Maar met die lisensie reeds uitgereik en Xingfeng wat reeds litium van Uis na China uitvoer, is die ministerie se hande in dié geval afgeknap.

Dié is om dié rede dat die ministerie regsadvies van Mbandaka – die regering se hoofregsadviseur – ingewin het.

Xingfeng is verlede Donderdag amptelik van die ministerie se voorlopige bevindinge in kennis gestel en moet binne 30 dae op die aantygings reageer.

Xingfeng het teen die einde van verlede jaar opslae gemaak toe bewerings kop uitsteek het dat hy N\$50 miljoen betaal het om Orange River Mining se litiummyn-eksplorasiesiensie op Uis te bekom.

Orange River Mining behoort aan Peter Shifwaku, 'n neef van Ralph Muyamba – wat verlede jaar indarhaas as Alweendo se tegniese adviseur bedank het toe die sake aan die lig gekom het.

Die lisensie het aanvanklik aan



Xingfeng voer reeds litium vanaf Uis na China uit. FOTO: ANSIEP

Karlowa Mining Enterprises behoort, maar dié is nie hernu nie en is onmiddellik aan die maatskappy toegeken waarmee Muyamba bande het. Laasgenoemde het toe spoedig uit die ministerie bedank.

Alweendo het Muyamba by die Teenkorrupsiekommissie van Namibië (ACC) aangegee en die minister het Erastus Shivolo as mynkommissaris vervang.

Shivolo het deurgaans ontken dat hy omkoopgeld aanvaar het om die oordrag van die lisensie aan Orange River Mining te bespoedig, wat dit toe aan Xingfeng verkoop het.

## ONTKENNING

Alweendo was huiwerig om besonderhede te deel oor die regsadvies wat van die prokureur-generaal se kantoor ingewin is, en het gesê hy

moet eers met Xingfeng vergader om hul reaksie te hoor op bewerings dat hy die lisensie onregmatig bekom het.

Dié vergadering word glo vir Maart beplan.

Op die vraag oor watter stappe gedoen sal word indien bevind word dat Xingfeng inderdaad sy lisensie op 'n twyfelagtige wyse bekom het, het Alweendo gesê: "Ek is nie seker wat hul antwoord sal wees nie, so ek kan nie vooraf sê watter stappe gedoen kan word nie."

Xingfeng se regsvertegenwoordiger, Namibi Mhata, het Maandag gesê sy klient ontken die aantygings wat teen hulle gemaak is.

"Ons kliente sal met graagte hul weergawe van gebeure deel sodra hulle dit aan die ministerie voorgelê het," het hy gesê.

"Hulle [Xingfeng] wil nie hê dit moet

in die media afspeel soos die ministerie hulle versoek om te doen nie. Hoe dit ook al sy, ons klient ontken die ministerie se merietelose aantygings teen hom, en dit sal by die toepaslike forum aan die ministerie gedemonstreer word."

## GROOT FOUT

Xingfeng se uitvoer van rou litiumerts het verlede jaar 'n herrie in Namibië ontken te midde van kommer oor 'n gebrek aan waardetoevoeging wat die plaaslike ekonomie kan bevoordeel.

Xingfeng, wat deur sy prokureurs teruggeveg het teen planne om die uitvoer te stop, het gesê hy sal vir nog drie jaar elke maand moet aanhou uitvoer om die koste van mynbedrywighede te dek. Kontantvloei te skep en sy beplande litiumverwerkingsfa-

briek van N\$500 miljoen – met 'n ontsoeringsaanleg – op die been te kry.

Alweendo het in November verlede jaar in die parlement gesê amptenare van sy ministerie het versium om te stipuleer hoeveel litiumerts Xingfeng kan uitvoer, en in die proses het dié maatskappy carte blanche gegee om te doen wat hy wil.

Die maatskappy het toe toestemming gekry om tot 135 000 ton litiumerts vanaf sy mynperseel uit te voer, hoewel hierdie uitvoere kwansuis net vir "toetsdoeleindes" is.

"Die ministerie-amptenare verantwoordelik vir die administrasie van uitvoerpermitte het nagelaat om met die maatskappy ooreen te kom oor die totale hoeveelheid erts wat vir toetsdoeleindes uitgevoer moes word," het Alweendo destyds gesê.

– republiek@republiek.co.na

## SPRAY-A-THON SKOP VOLGENDE WEEK AF

Die nasionale Spray-A-Thon ten bate van die Kankervereniging van Namibië (CAN) is van stapel gestuur.

Dié jaarlikse geldinsamelingsveldtog word aangebied om bewustheid van kinders met kanker te skep en om hulle finansiële te ondersteun.

Vanjaar se projek skop op Woensdag 1 Maart af en skole en ondernemings kry die geleentheid om gekleurde haarsproei te bestel en hul eie Spray-A-Thon-geleentheid tot die einde van April aan te bied. Jaarliks word ongeveer N\$250 000 ingesamel. Die opbrengste van dié projek word ten bate van die tydlike huis vir kinders met kanker in Namibië (Chica) aangewend en Chica se ondersteuningsprogram vir pasiënte, asook Windhoek Sentrale Hospitaal se onkologie-kindersaal.

Vir meer inligting en bestellings kontak 061 237 740 of projects@can.org.na of projects2@can.org.na.



Kushi, Roberto en Gerhardus van CAN is gereed om te begin. FOTO: VERSKAF

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WEER

BINNELAND: Gedeeltelik bewolk en warm in die weste en verre suidweste. Elders gedeeltelik bewolk en warm met geïsoleerde donderbuie, maar verspreide donderbuie in die sentrale noorde.

KUS: Gedeeltelik bewolk en matig tot warm.

GETYE BY WALVISBAAI: L: 05:30 H: 11:55 L: 18:26

VOORUITSIGTE

Table with weather forecasts for Windhoek, Rundu, Oshakati, Gobabis, Mariental, Keetmanshoop, Walvisbaai, Luanda, Johannesburg, and Kaapstad.

Hofverrigtinge gaan vandag voort

Esau-borgaansoek verdraag

Regter David Munsu het beslis as Bernard Esau nie betyds herstel nie, sal Nigel van Wyk se aansoek om borgtog eerste aangehoor word.

Irene-Mari van der Walt

Nadat die Fishrot-beskuldigdes Bernard Esau en Nigel van Wyk se aansoek om borgtog Maandag in die hofhoor in Windhoek uitgestel is om Esau die geleentheid te gee om met sy regsvertegenwoordiger te konsulteer, is verrigtinge weer eens gister uitgestel.



Die voormalige minister van visserye, Bernard Esau, se gesondheid belemmer glo vordering in sy aansoek om borgtog. FOTO: IRÈNE-MARI VAN DER WALT

Esau se regsvertegenwoordiger, Florian Beukes, het aan die hof verduidelik dat hul konsultasie onsuksesvol was weens Esau se gesond-

heid. "Hy het nie gereageer nie, was lusteloos en klaarliklyk verswak. Hy kon dus nie behoorlik instruksies aan my deurgee nie. Daarom het ons gereël dat mnr. Esau

na 'n hospitaal of mediese praktisyn geneem word," het Beukes aan die hof gesê. Esau sou na verwagting gister weer die getuienbank ingeneem het en het glo gisteroggend gesê hy

Munsu het die versoek toegestaan en verrigtinge tot vandag uitgestel en aangedui dat die hof met Van Wyk se aansoek om borgtog sal voortgaan indien Esau nie betyds herstel nie.

"Sou hy steeds ongesteld wees, sal ons aanskuif na die tweede aansoeker (Van Wyk) se borgtog-aansoek in die belang van vordering," het die regter gesê.

Esau se verswakende gesondheidstoestand is een van die nuwe feite waarop die borgtog-aansoek gebaseer is.

Hy het Desember verlede jaar getuig dat sy persoonlike omstandighede en mediese toestand sedert sy inbegrensname in 2020 agteruitgegaan het. Hy ly glo aan verskeie hartkwaes, asook artritis en diabetes.

irene-mari@erongo.com.na

Onderwys

VAN BL. 1

Die minister van onderwys, kuns en kultuur, Anna Nghipondoka, sê die ministerie het 'n volledige plan ontwikkel vir die implementering van die nuwe leerplan, wat insluit beroepsgerigte vakke. Toe

dié plan geïmplementeer moes word, het die geld daarvoor egter reeds minder geraak.

"Ons sê die ministerie erken dit, die behoefte hou aan groei en ons sien daar is geen ewewig tussen die groei van die

leerlingbevolking en die geld wat toegeken word nie," het Nghipondoka gesê. Laasgenoemde het gelei tot die Versnelde Ontwikkelingsplan vir Infrastruktuur.

"Die ministerie sien die tekort aan klaskamers as 'n dringende behoefte, maar dit is nie 'n korttermyn-kwessie nie.

"Hierdie N\$213 miljoen sal die ministerie in staat stel om 'n bykomende 510 klaskamers en 70 ablusiegeriewe vir dié finansiële jaar te bou.

"Die ministerie is ook deur middel van sy Vriende van Onderwys,

soos die MTC en ander ontwikkelingsvennote (veral ambassades), besig om nog klaskamers in veral landelike gebiede te bou."

OPLOSSINGS GESOEK

Volgens Nghipondoka is Namibië se tekort aan hulpbronne nie uniek nie en is dit 'n globale krisis. Die regering kan ook nie alleen vir die oplossing verantwoordelik wees nie.

Die minister sê haar ministerie ondersoek nou ander maniere om finansiële steun te vind. Dit sluit in ontmoetings met

verskeie semistaatsinstellings, die ministeries van myne en energie en visserye om te verseker die land se hulpbronne word gebruik om die ministerie te help.

"Ons is reeds besig om te vergader en nuwe moontlikhede te ondersoek om die ministerie te help met die hervorming van ons onderwys.

"Selfs parlamentslede, kom ons gaan uit - dis ons kinders en ons regering. Nader maatskappye en sê kyk, hier word onder- rian kinders in 'n tent gegee, kom help ons."

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Menseregte dien juis minderhede

VAN BL. 1 Mudge het uitgewys dat selfs al is 'n meerderheid

van Namibiërs teen homoseksualiteit, is dit uit 'n regspogpunt nie relevant nie: "Verl in 'n situasie waar konsensus moeilik is, is menseregte so belangrik. Die betekenis en doel van die wet is bedoel om minderhede te doen die meerderheid te beskerm," het sy gesê.

Sy het ook daarop gewys dat die gemeenskap nie bloot kan wag dat dinge mettertyd vanself verandering nie.

"Hierdie jaar is daar nie tyd vir vrees in die land van die dapperes nie, want menseregte is universeel, selfs wanneer sommige nie saamstem nie."

Worsbroodjies maak studies moontlik

VAN BL. 1

"Ek het 'n sleepstang gemaak sodat die wa agteraan my fiets gehaak kan word."

Daniel maak elke oggend 'n vars tamatie-en-uieslaai wat hy saam met die sous op die worsbroodjies sit om dit van ander wors-

broodjies te onderskei.

"Ek is elke oggend by die Riverside-diensstasie in Eros en dan beweeg ek aan na Nust vir die studente wat vir middag-eit uitkom. As ek op een oggend bietjie laat is of nie op my plek is nie, dan is ek in die moeilikheid

by my kliente.

"Ek wil hulle gerusstel, al gaan ek nou vir ses maande weg om my studies klaar te maak, sal ek weer met die besigheid aangaan sodra ek terug in Windhoek is." Daniel wil as ketelmaker begin werk sodra hy sy laaste intern-

skap voltooi.

"Ek wil my wa en fiets verbe-ten en dan iemand kry wat die worsbroodjies namens my kan verkoop. Ek wil iemand anders so help. Ek het met Humble Hustle begin, want almal kan beskeie onder begin en geld verdien."

"Ek wil iemand help, want niemand behoort swaar te kry nie. Wees nederig en doen iets."

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## **Appendix B: Consultant's 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 175 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 : 22  
 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/Biochemistry : 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 : OSH-Med 2022  
 Basic Fire Fighting : OSH-Med 2022

**PROFESSIONAL SOCIETY AFFILIATION:**

Environmental Assessment Professionals of Namibia (Practitioner and Executive 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 +175  
 Research Reports & Manuals: 5  
 Conference Presentations: 1