



**PROPOSED NEW BULK STORAGE FACILITY
FOR HAZARDOUS CHEMICALS PRODUCTS
AT LÜDERITZ ERF 522**

**ENVIRONMENTAL MANAGEMENT
PLAN**



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1 BACKGROUND AND INTRODUCTION

KAESO OILFIELD SERVICES (PTY) LTD was established in Angola, and now its expanding to Namibia in Luderitz. The main business activity will involve providing bulk storage of Chemicals and drilling mud used in the petroleum exploration and production drilling offshore Namibia. Namibia at the moment is experiencing a high influx of exploration companies after recent discoveries in Orange basin. Hence a demand for offshore supply and logistics services is on demand. Hence, KAESO OILFIELD SERVICES (PTY) LTD sees this opportunity to provide a logistics of temporary handling and storage of chemicals in transit to the drilling rigs offshore Namibia, at the port of Lüderitz.

As part of the planning phase, the Proponent initiated an environmental impact assessment (EIA) process with the aim of obtaining an environmental clearance certificate (ECC) for the proposed storage of hazardous chemicals at Luderitz. CEGEOR cc was appointed to draft an environmental scoping report and environmental management plan (EMP) for the development and operations of the storage of hazardous chemicals.

Aspects of the development that forms part of the environmental assessment includes all activities that will take place within port bounds. That is arrival of a truck or train at the port, offloading of hazardous chemicals within a purpose built warehouse for temporary storage, loading of a barge (or transshipment vessels) berthed at the quay wall, and all administrative and ancillary tasks required for efficient and reliable operations and handling.

This EMP was developed in support of the EIA and application for an ECC in compliance with Namibia's Environmental Management Act (Act No 7 of 2007) (EMA).

2 ENVIRONMENTAL MANAGEMENT PLAN

The purpose of this section is to list the most pertinent environmental impacts that are expected from the operational, construction (upgrades, maintenance, etc.) and potential decommissioning activities of the facility.

2.1 OBJECTIVES OF THE EMP

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 facility. All personnel taking part in the construction, operations or decommissioning 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.

2.2 IMPLEMENTATION OF THE EMP

Section 2.3 outline the management of the environmental elements that may be affected by the different activities. Impacts addressed and mitigation measures proposed are seen as minimum requirements which have to be elaborated on. Delegation of mitigation measures and reporting activities should be determined by the proponent and included in the EMP. The EMP is a living document that must be prepared in detail, and regularly updated, by the proponent as the project progress and evolve.

The EMP and ECC must be communicated to the site managers and copies should be kept on site. All monitoring results must be reported on as indicated. Reporting is important for any future renewals of the ECC and must be submitted to the MEFT. Renewal of ECC will require six monthly reports based on the monitoring prescribed in this EMP.

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

2.3 MANAGEMENT OF IMPACTS: OPERATIONS AND CONSTRUCTION

The following section provide management measures for both the operational phase as well as construction activities related to the chemical storage facility.

2.3.1 Planning

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

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

activities, operations and decommissioning as outlined in the EMP.

- ◆ Submit bi-annual reports to the MEFT to allow for environmental clearance certificate renewal after three years. This is a requirement by MEFT.
- ◆ Appoint a specialist environmental consultant to update the EIA and EMP and apply for renewal of the environmental clearance certificate prior to expiry.

2.3.2 Contribution to the National Economy (Revenue & Investment Confidence)

The construction of the chemical storage infrastructure will see considerable investment into the local economy. During the operational phase, hazardous chemicals used for petroleum drilling activities will be received and stored at the storage facility prior to shipping to the drilling rigs. Various activities involved with the logistics chain to achieve this will generate significant revenue for Namibia. The successful implementation of the project, and related return on investment, will boost investors' confidence in Namibia in general. It will further contribute to Namibia's sustainability goals of Vision 2030 and the related development goals of NDP5. The project will contribute to the stimulation of growth and localised expenditure in Lüderitz.

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

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

Actions

Enhancement:

- ◆ Maximise contribution to the Namibian economy by using Namibian contractors, suppliers and goods during construction,

Responsible

- ◆ **Body:**
- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Keep records of contracts or agreements with petroleum exploration companies.

2.3.3 Employment, Remuneration and Spending Power

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

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

Actions

Enhancement:

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

Responsible

- ◆ **Body:**
- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

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

2.3.4 Skills, Technology and Development

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

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

Actions

Enhancement:

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

Responsible

- ◆ **Body:**
- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

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

2.3.5 Ideals and Aspirations for the Future

During the environmental assessment, public consultation was conducted with neighbours and interested and or affected parties. Information shared with the parties resulted in a change in aspirations for the future. From the field observation, there is potential of increased noise and traffic during construction, and this negatively affect aspirations. However, local community members and job seekers remain hopeful that the project will provide additional employment opportunities and this positively affected aspirations.

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

Actions

Enhancement:

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

Responsible

- ◆ **Body:**
Proponent

Data Sources and Monitoring:

- ◆ Records kept of all information shared with authorities, local residents and employees

2.3.6 Demographic Profile and Community Health

The project is reliant on labour during the construction and operational phase. The scale of the project is limited and it is not expected to create a significant change in the demographic profile of the local community. However, new developments can attract jobseekers to the Lüderitz that can increase unemployment in the area. Community health may be exposed to factors such as communicable disease like HIV/AIDS and alcoholism / drug abuse, often associated with the trucking industry (transport of goods). Additional spending power in a community with high addiction rates, alcoholism and genderbased violence, can increase such societal deviances.

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

Actions:

Prevention:

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

Mitigation:

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

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Facility inspection sheet for all areas which may present environmental health risks, kept on file.
- ◆ Bi-annual summary report based on educational programmes and training conducted.
- ◆ Bi-annual report and review of employee demographics.

2.3.7 Traffic

Construction of the warehouse will result in some traffic impacts when building materials and equipment are transported to the site. These impacts will be temporary. The hazardous chemical storage operations will be within the Port of Lüderitz at the industrial zone erf 522. Operations directly related to the facility will have some traffic impacts within the port itself when delivering the chemicals to the offshore supply vessel. This can be in the form of traffic congestion and an increased risk of collisions or accidents. Traffic congestion and delays with an increased risk of collisions or accidents can occur at the gates and rail level crossing and this can impact surrounding streets, especially Hafen-, Bismarck-, Moltke- and Bahnhof-Street.

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

Actions

Mitigation

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

Responsible

- ◆ **Body:**
- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

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

2.3.8 Employee Health and Safety (Warehouse and Quayside)

The various construction and operational activities associated with the project are performed by employees who are exposed to occupational health and safety risks of varying degrees. Activities such as the operations of machinery, working at heights, vehicular traffic, falling objects, exposure (mainly inhalation) to hazardous chemicals, poses the main risks to employees.

Chronic exposure to low levels of fumes or vapors from hazardous chemicals presents the greatest risk to employees working within the chemical storage warehouse. The risk is not only related to the hazardous chemicals, but also to the potentially harmful materials during construction. It will be necessary to provide protective gear and helmet to the worker at all times.

Desired Outcome: To prevent injury and health impacts. Specifically exposure to hazardous chemical vapors, skin contact and falling objects must be prevented.

Actions

Prevention:

- ◆ All Health and Safety standards specified in the Labour Act should be followed.
- ◆ Clearly label and demarcate dangerous and restricted areas, equipment and products. Adequate ventilation must be reinforced at all time in the storage warehouse.
- ◆ Provide all employees with required and adequate personal protective equipment (PPE) including dust masks and protective clothing for workers in close proximity to, or working or handling hazardous chemicals.
- ◆ Accidental inhalation, ingestion, dermal or eye contact with any hazardous chemicals must be prevented at all times.
- ◆ Ensure that all employees receive adequate training on handling of hazardous chemicals or any hazardous chemicals that is stored in the ware house.
- ◆ Employees should be informed on the potential dangers of inhaling vapors from the hazardous chemicals to ensure they conscientiously wear PPE at all times.
- ◆ Service, maintain and repair all equipment regularly at the ware house, as failing machinery and equipment can be potential causes of injury or death.

Mitigation:

- ◆ Implement and maintain an integrated health and safety management system, to act as a monitoring and mitigating tool, which includes operational, safe work and medical procedures, permits to work, emergency response plans, housekeeping rules, MSDS's (Material Safety Data Sheet) and signage requirements (PPE, flammable etc.).
- ◆ Selected personnel should be trained in first aid and first aid kits must be available

on site.

- ◆ The contact details of all emergency services must be readily available / displayed for use in emergency situations.
- ◆ Emergency wash stations in case of accidental exposure to chemicals.

Responsible

- ◆ **Body:**
- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Air quality monitoring must be conducted on site and within the chemical warehouse to especially monitor vapors or fumes from the chemicals.
- ◆ From MSDS obtained from the client, ascertain danger level of the chemical to be stored's class of danger.
- ◆ Do not mix chemical with different chemical behavior that may pose a risk when there vapors or fumes mix in concentration.
- ◆ Insure continued very strict and approved health and safety procedures related to the handling of hazardous chemicals.
- ◆ Any incidents must be recorded with action taken to prevent future repetition of such incident or negligence.
- ◆ A bi-annual report should be compiled of all incidents reported. The report should contain dates and the type of chemical exposure, or object and remedies adopted.

2.3.9 Air Quality Related Impacts

Reduced air quality as a result of fumes and vapors in case the hazardous chemicals not properly sealed. This may have localised health impacts. However adequate ventilation in the warehouse may discard the fumes or vapors out to the open air and disperse relatively quickly due to the frequent high velocity south-westerly winds in Lüderitz. They will be relatively a small significant greenhouse gas emission from trucks, during construction from exhaust. It is thus the responsibility of all stakeholders to implement strategies and measures to curb the release of greenhouse gases. Although the Proponent's contribution to greenhouse gas emissions will be minimal. Sources of such dust can be from trucks since the gravel road is not bitumen standard and dust then becoming airborne in strong winds.

Desired Outcome: To prevent health impacts in humans. To maintain the integrity during the use of the gravel road and construction period. To reduce dust particles.

Actions

Prevention:

- ◆ To constantly water the dust gravel road as a way of dust suppression using a purpose built fresh water dust suppression truck.

Mitigation:

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

Responsible Body:

- ◆ Proponent
- ◆
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Air quality monitoring must be conducted on site of dust. If air quality deteriorates or complaints are received, it should be investigated and mitigation measures implemented or improved. Monitoring to be coordinated by Local authority Luderitz Town Council.
- ◆ From MSDS of each Hazardous chemical as received from the clients, ascertain the extent of the danger level of such chemical and class. So that handling and storage procedures can be done under very strict and approved health and safety procedures.
- ◆ Any incidents must be recorded with action taken to prevent future occurrences.
- ◆ A bi-annual report should be compiled of all incidents reported. The report should contain dates and the type of chemical exposure, or object and remedies adopted.

2.3.10 Site Security

Security risks are related to unauthorized entry, theft and sabotage. KAESO OIL FIELD SERVICES should at all times implement security measures and access control in place at the warehouse. Access to the warehouse and surrounds must still be controlled to prevent unauthorised access, during both construction and operations.

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

Actions

Prevention:

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

Responsible

- ◆ **Body:**
- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

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

2.3.11 Fire

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

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

Actions:

Prevention:

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

Mitigation:

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

Responsible

- ◆ **Body:**
- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

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

2.3.12 Noise

Noise will be generated from moving trucks to and from the warehouse. The noise can be a nuisance to residents, may deter tourists from visiting certain existing tourist establishments or Lüderitz in general.

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

Actions Prevention:

- ◆ Follow World Health Organization (WHO) guidelines on maximum noise levels (Guidelines for Community Noise, 1999) to prevent hearing impairment and be a nuisance to nearby receptors.
- ◆ All machinery, for example the fork lifts and trucks must be regularly serviced to ensure minimal noise production.
- ◆ Switch to white noise audible alarms on vehicles and machinery like forklifts.

Mitigation:

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

Responsible

- ◆ **Body:**
- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

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

2.3.13 Waste production

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

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

Actions Prevention:

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

Mitigation:

- ◆ Waste should be disposed of regularly and at appropriately classified disposal facilities, this includes hazardous chemical material (empty hazardous chemical containers, contaminated rugs, paper water and soil).

Responsible

- ◆ **Body:**
- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ A register of hazardous chemical waste disposal should be kept. This should include type of waste, volume as well as disposal method/facility.
- ◆ Any complaints received regarding waste should be recorded with notes on
- ◆ action taken. All information and reporting to be included in a bi-annual report.

2.3.14 Ecosystem and Biodiversity Impact - Terrestrial

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

Desired Outcome: To avoid bird impacts.

Actions. Prevention:

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

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

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

2.3.15 Ecosystem and Biodiversity Impact - Marine

Any impacts on the marine environment which will mainly be related the ~~accid~~ spillage of hazardous chemicals into the ocean during ship loading activities.

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

Actions.

Prevention:

- ◆ Loading of ships should be performed by responsible and well experienced operators of equipment.
- ◆ Loading activities must cease when an incident of hazardous chemical spill is noticed and only be continued once mitigation measures have been implemented.

Mitigation:

- ◆ The quay areas that becomes contaminated by hazardous chemical spill must be decontaminated / cleaned to reduce the dispersion of such hazardous chemical from entering the ocean in runoff water.

Responsible

- ◆ **Body:**
- ◆ Namport
- ◆ Contractors
- ◆ Proponent

Data Sources and Monitoring:

- ◆ Water quality monitoring must be conducted at the port to monitor levels of dispersion of the chemical in the immediate ocean vicinity. Monitoring to be coordinated by Namport.
- ◆ All information and reporting to be included in a bi-annual report.

2.3.16 Groundwater, Surface Water and Soil Contamination

During construction and operations some chemicals will be present on site. Excavators, front-end loaders and trucks contain fuel, oil and hydraulic fluids that may leak. Also during operations stored hazardous chemicals may pose a risk during handling when offloading and loading to the trucks. In the case of poor handling a spillage of the hazardous chemical may spill to the ground. The main receptor is the ocean (surface water) at the port, or groundwater and soil at the warehouse. Both ocean and surface water contamination can carry pollutants to sensitive receptors such as nearby mariculture areas and rocky shores.

In addition, surface runoff contaminated with hazardous chemicals, can either enter the ocean, sewers or storm water drains if not contained.

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

Actions

Prevention:

- ◆ Any hazardous chemical spill must be cleaned immediately.
- ◆ Drip trays must be readily available should a vehicle or machine start leaking.
- ◆ Vehicles should not be serviced or repaired on site. Drip trays must be used at all times if repairs must be conducted on site.
- ◆ The warehouse floors must be designed to with stand any corrosive attack from the hazardous chemical in case of the spill in the ware house
- ◆ Contaminated water must be prevented from entering any storm water drain or sewer and must be handled and discarded as hazardous waste.
- ◆ Proper training of operators must be conducted on a regular basis to avoid accidents.

Mitigation:

- ◆ Spilled hazardous chemicals around the warehouse must be cleaned regularly to avoid them be part of runoff into the ocean.
- ◆ Action must be taken immediately for all instances where the chemical spill is not contained. Operations must be halted and corrective measures implemented.
- ◆ Any spill must be cleaned up immediately.

Responsible

- ◆ **Body:**
- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Keep record of any complaints received and incidents occurred and

investigate such complaints/ incidents and take corrective action to prevent future occurrences.

- ◆ A report should be compiled bi-annually of all monitoring conducted.

2.3.17 Impacts on Local Utilities and Infrastructure

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

Desired Outcome: No impact on utilities and infrastructure.

Actions

Prevention:

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

Mitigation:

- ◆ Emergency procedures available on file.

Responsible Body:

- ◆ Lüderitz Town Council
- ◆ Contractors
- ◆ Proponent

Data Sources and Monitoring:

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

2.3.18 Visual Impact

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

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

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

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

Actions

Prevention:

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

Mitigation:

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

Responsible

- ◆ **Body:**
- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

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

2.3.19 Sense of Place

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

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

Actions

Mitigation:

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

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

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

2.3.20 Cumulative Impact

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

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

Actions

Mitigation:

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

Responsible Body:

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

Data Sources and Monitoring:

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

2.4 DECOMMISSIONING AND REHABILITATION

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

2.5 ENVIRONMENTAL MANAGEMENT SYSTEM

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

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

3 CONCLUSION

The above management measures, if properly implemented will help to continually minimise adverse impacts on the environment while promoting positive impacts. Where negative impacts occur, immediate action must be taken to reduce the escalation of effects associated with these impacts. To ensure the relevance of this document it must be reviewed on a regular basis.

This EMP should continue to be used as an on-site reference document during all phases of the proposed project, and auditing should take place in order to determine compliance with the EMP for the proposed site. Parties responsible for transgression of the EMP should be held responsible for any rehabilitation that may need to be undertaken. Monitoring reports and rehabilitation plans and results must be submitted to the Ministry of Environment, Forestry and Tourism on a bi-annual basis to allow for future renewal of the ECC, this is a requirement of the Ministry.