

APP-00291

**BOTSWANA DRY PORT FACILITY IN THE PORT OF WALVIS
BAY**

ENVIRONMENTAL MANAGEMENT PLAN



Assessed by:



Assessed for:



November 2022

Project:	BOTSWANA DRY PORT FACILITY IN THE PORT OF WALVIS BAY ENVIRONMENTAL MANAGEMENT PLAN	
Report: Version/Date:	Final November 2022	
19Prepared for: (Proponent)	Sea Rail Botswana (Pty) Ltd P O Box 5100 Walvis Bay	
Lead Consultant	Geo Pollution Technologies (Pty) Ltd PO Box 11073 Windhoek Namibia	TEL.: (+264-61) 257411 FAX.: (+264) 88626368
Main Project Team:	André Faul (B.Sc. Zoology/Biochemistry); (B.Sc. (Hons) Zoology); (M.Sc. Conservation Ecology); (Ph.D. Medical Bioscience) Johann Strauss (BA. Geography/Psychology); (BA. Environmental Management)	
Cite this document as:	Faul A, Strauss J; 2022 November; Botswana Dry Port Facility in the Port of Walvis Bay: Environmental Management Plan	
Copyright	Copyright on this document is reserved. No part of this document may be utilised without the written permission of Geo Pollution Technologies (Pty) Ltd.	

TABLE OF CONTENTS

1	OBJECTIVES OF THE EMP	1
2	IMPLEMENTATION OF THE EMP	1
2.1	PLANNING	2
2.2	IMPACTS AND RELATED MANAGEMENT MEASURES.....	3
2.2.1	<i>Skills and Development</i>	3
2.2.2	<i>Revenue Generation and Employment</i>	4
2.2.3	<i>Demographic Profile and Community Health</i>	5
2.2.4	<i>Traffic</i>	6
2.2.5	<i>Health, Safety and Security</i>	7
2.2.6	<i>Fire and Explosion</i>	8
2.2.7	<i>Noise</i>	9
2.2.8	<i>Dust and Air Quality</i>	10
2.2.9	<i>Waste production</i>	11
2.2.10	<i>Ecosystem and Biodiversity Impact</i>	12
2.2.11	<i>Groundwater, Surface Water and Soil Contamination</i>	13
2.2.12	<i>Visual Impact</i>	14
2.2.13	<i>Cumulative Impact</i>	15
2.3	DECOMMISSIONING AND REHABILITATION	16
2.4	ENVIRONMENTAL MANAGEMENT SYSTEM.....	16
3	CONCLUSION	16
4	REFERENCES	16

1 OBJECTIVES OF THE EMP

Geo Pollution Technologies (Pty) Ltd prepared an environmental management plan (EMP) for the Botswana Dry Port located in the Port of Walvis Bay. The EMP is based on the environmental impact assessment conducted for the facility in 2019 (Coetzer & Faul, 2019). The EMP provides management options to ensure impacts of construction and operational activities at the facility are minimised. An EMP is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigation measures might be included if necessary. The EMP acts as a stand-alone document, which can be used during the various phases (planning, construction, operational and decommissioning) of any proposed activity or development.

All contractors and sub-contractors taking part in construction and operational activities related to the Botswana Dry Port, should be made aware of the relevant sections of the EMP, so as to plan the relevant activities accordingly in an environmentally sound manner.

The objectives of the EMP are:

- ◆ to include all components of the various activities;
- ◆ to prescribe the best practicable control methods to lessen the environmental impacts associated with the both construction and operational activities;
- ◆ to monitor and audit the performance of the construction and operational personnel in applying such controls; and
- ◆ to ensure that appropriate environmental training is provided to responsible personnel and contractors.

2 IMPLEMENTATION OF THE EMP

The sections below outline the management of the environmental elements that may be affected by the activities associated with the various phases of the facility. These phases are as follows:

- ◆ Planning Phase
- ◆ Care and Maintenance Phase
- ◆ Operational Phase
- ◆ Decommissioning Phase

The EMP is a living document that must be prepared in detail, and regularly updated, by the Proponent as the project progress and evolve. Impacts addressed and mitigation measures proposed are seen as minimum requirements which have to be elaborated on where appropriate. Delegation of mitigation measures and reporting activities should be determined by the Proponent and included in the EMP.

All monitoring results must be reported on as indicated. Reporting is important for any future renewals of the environmental clearance certificate (ECC) and must be submitted to the Ministry of Environment, Forestry and Tourism. Renewal of ECC will require bi-annual reports based on the monitoring prescribed in this EMP.

Various potential and definite impacts will emanate from the operations, care and maintenance, and decommissioning phases. The majority of these impacts can be mitigated or prevented. The impacts as well as prevention and mitigation measures are listed below. The general guidance and impact descriptions provided below are based on the findings of the initial EIA and risk assessment carried out by Geo Pollution Technologies (Coetzer & Faul, 2019).

2.1 PLANNING

During the phases of planning for the operations, maintenance / construction and decommissioning phases 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) activities and operations of the project remains valid.
- ◆ Ensure all appointed contractors and employees enter into an agreement which includes the EMP. Ensure that the contents of the EMP are understood by the contractors, sub-contractors, employees and all personnel present or who will be present on site.
- ◆ Make provisions to have a Health, Safety and Environmental Coordinator to implement the EMP and oversee occupational health and safety as well as general environmental related compliance at the site.
- ◆ Have the following emergency plans, equipment and personnel on site, where reasonable, to deal with all potential emergencies:
 - EMP / risk management / mitigation / emergency response plan and health safety and environment (HSE) manuals
 - Adequate protection and indemnity insurance cover for incidents;
 - Comply with the provisions of all relevant labour and 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 operations, maintenance / construction, and decommissioning as outlined in the EMP.
- ◆ Submit bi-annual reports to the MEFT to allow for ECC renewal after three years. This is a requirement by MEFT.
- ◆ Appoint a specialist environmental consultant to update the EMP and apply for renewal of the ECC prior to expiry.

2.2 IMPACTS AND RELATED MANAGEMENT MEASURES

The following section provide management measures for both the operational phase as well as care and maintenance activities related to the project.

2.2.1 Skills, Technology and Development

During various phases of construction and operations, training is provided to a portion of the workforce associated with the dry port. Skills are transferred to an unskilled workforce for general tasks. The technology required for the development of the facility is often 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 Walvis Bay, as well as development and technology advancements in associated industries.

Actions

Enhancement:

- ◆ If the skills exist locally, contractors must first be sourced from the town, then the region and then nationally. Deviations from this practice must be justified.
- ◆ 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.

2.2.2 Revenue Generation and Employment

The change in land use has led to changes in the way revenue is generated and paid to the national treasury. An increase of skilled and professional labour has and will continue to take place due to the operations of the facility. Employment is sourced locally while skilled labour/contractors may be sourced from other regions.

Desired Outcome: Contribution to national treasury and provision of employment to local Namibians.

Actions

Enhancement:

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

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Bi-annual summary report based on employee records.

2.2.3 Demographic Profile and Community Health

The project is reliant on labour during the operational phase. The scale of the project is limited and it is not foreseen that it has created a change in the demographic profile of the local community. Community health may be exposed to factors such as communicable disease like HIV/AIDS and alcoholism/drug abuse, associated with the transport industry (shipping of good to and from Walvis Bay). An increase in foreign people in the area may potentially increase the risk of criminal and socially/culturally deviant behaviour.

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 where possible, deviations from this practice should be justified appropriately.
- ◆ 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.

Mitigation:

- ◆ Educational programmes for employees (especially truck drivers) on HIV/AIDs and general upliftment of employees' social status.
- ◆ Appointment of reputable contractors.

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.

2.2.4 Traffic

The dry port is within an area zoned for harbour use, in the Port of Walvis Bay. All trucks accessing the site for loading and offloading of cargo has to pass through the Namport main gate. This may have increased the traffic flow through the port of Walvis Bay to the site, and may increase congestion and the risk of accident. The proposed import and export of chemicals and ore will add to the amount of trucks accessing and leaving the site, as well as national road networks. As only the office and administrative building is accessible from 5th Street, no traffic impacts is expected in this street.

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

Actions

Mitigation:

- ◆ Trucks delivering or collecting goods should not be allowed to obstruct any traffic in surrounding areas and the town.
- ◆ Trucks associated with the facility should not be allowed to park or overnight in 5th Road or 5th Street, and may only overnight at areas designated for this purpose.
- ◆ Adhere to Namport and Town Council regulations e.g. preferred routes through town and mitigation measures provided in Namport EMP's.
- ◆ Adhere to The Road Traffic and Transport Regulations, 2001 and all other applicable legislation related to road transport and maximum axle loads.
- ◆ If any traffic impacts are expected, traffic management should be performed to prevent these.
- ◆ The placement of signs to warn and direct traffic will mitigate traffic impacts.
- ◆ Identify vehicles on which hazardous substances are to be transported and handle all dangerous or hazardous goods according to MSDS instructions and under supervision of trained staff. Ensure the correct documentation (e.g. dangerous goods declaration, TREMCARD, etc.) is provided in the vehicle. Verify that the driver of the vehicle has undergone appropriate training.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ The Road Traffic and Transport Regulations, 2001
- ◆ Any complaints received regarding traffic issues should be recorded together with action taken to prevent impacts from repeating itself.
- ◆ A report should be compiled every 6 months of all incidents reported, complaints received, and action taken.

2.2.5 Health, Safety and Security

Every activity associated with the operational phase is reliant on human labour and therefore exposes them to health and safety risks. Activities such as the operation of machinery, unsafe stacking, falling from heights and handling of hazardous chemicals (inhalation and carcinogenic effect of hydrocarbons and other potential chemicals), poses the main risks to employees. If not contained, windblown dust of certain ores and chemicals may further pose health risk to nearby receptors such as residents. Security risks are related to unauthorized entry, theft and sabotage.

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

Actions

Prevention:

- ◆ Clearly label dangerous and restricted areas as well as dangerous equipment and products.
- ◆ Equipment that will be locked away on site must be placed in a way that does not encourage criminal activities (e.g. theft).
- ◆ Provide all employees with required and adequate personal protective equipment (PPE).
- ◆ Ensure that all personnel receive adequate training on operation of equipment.
- ◆ Personnel to be trained in correct chemical handling procedures, the dangers of chemical exposure, and potential risks of injuries on site.
- ◆ All health and safety standards specified in the Labour Act should be complied with.
- ◆ Implementation of maintenance register for all equipment and fuel/hazardous substance storage areas.
- ◆ All hazardous substances should be handled according to the MSDS.

Mitigation:

- ◆ Selected personnel should be trained in first aid and a first aid kit must be available on site. The contact details of all emergency services must be readily available.
- ◆ Maintain a MSDS file on site at a readily accessible location. The MSDS file must continuously be updated and the relevant personnel informed and trained as per the MSDS content.
- ◆ 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 report should be compiled every 6 months of all incidents reported. The report should contain dates when training were conducted and when safety equipment and structures were inspected and maintained

2.2.6 Fire and Explosion

Operational and development activities may increase the risk of the occurrence of fires. Certain products that may be kept on site can be flammable in nature and can even become explosive when exposed to incompatible materials. Diesel stored in the consumer fuel installation also presents a fire risk. Sea Rail also proposed the import of explosive for use in the mining industry. The site is located within the port, opposite to residential properties and fires and explosion on site can cause extensive damage to the port or surrounding properties and can lead to casualties.

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

Actions:

Prevention:

- ◆ Ensure all chemicals are stored strictly according to MSDS and SANS instructions. This include segregation of incompatible products.
- ◆ Maintain regular site, mechanical and electrical inspections and maintenance.
- ◆ Clean all spills / leaks.
- ◆ Special note must be taken of the regulations stipulated in sections 47 and 48 of the Petroleum Products and Energy Act, 1990 (Act No. 13 of 1990).
- ◆ Follow SANS standards for operation and maintenance of the consumer fuel installation.
- ◆ All dispensers must be equipped with devices that cut fuel supply during fires.
- ◆ For transport of explosive chemicals predetermined routes and times of transport should be followed. Transport routes and methods should be determined in conjunction with the Ministry of Safety and Security, Namport as well as the relevant local authorities.

Mitigation:

- ◆ A holistic fire protection and prevention plan is needed for flammable products and the consumer fuel installation. This plan must include an emergency response plan, firefighting plan and spill recovery plan, and should include specific substances handled at the site.
- ◆ Maintain firefighting equipment, good housekeeping and personnel training (firefighting, fire prevention and responsible housekeeping practices).

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ A register of all incidents must be maintained on a daily basis. This should include measures taken to ensure that such incidents do not repeat themselves.
- ◆ A report should be compiled every 6 months of all incidents reported. The report should contain dates when fire drills were conducted and when fire equipment was tested and training given.

2.2.7 Noise

Noise pollution will exist due to heavy and light motor vehicles accessing the site to load and offload cargo, from the stacking and moving of containers and other large equipment, as well as from the reefers. The reefers will be stacked three high, and operate 24 hours a day, therefore noise from the electric motors of the containers will be generated throughout the day and night. As it will be electric reefer containers, noise is however expected to be limited. Construction (maintenance and upgrade) may generate excessive noise.

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

Actions

Prevention:

- ◆ The World Health Organization (WHO) guideline on maximum noise levels (Guidelines for Community Noise, 1999) to prevent hearing impairment for workers on site should be followed during the construction and operational phases. This limits noise levels to an average of 70 dB over a 24 hour period with maximum noise levels not exceeding 110 dB during the period.
- ◆ The facility should meet WHO standards for noise at industrial areas during daytime operating hours (07h00 to 17h30).
- ◆ During after hour operations (17h30 to 07h00) WHO standards to prevent nuisance at residential areas should be met at the nearby residential properties, this is, night time noise levels of 35 dB or lower over an 8 hour period and not exceeding 45 dB.
- ◆ The facility should further strive to meet WHO standards at the nearby residential properties to prevent a nuisance during daytime operations as well, this is daytime noise levels not exceeding 55 dB.
- ◆ All machinery must be regularly serviced to ensure minimal noise production.
- ◆ Confine noise generating operational activities to daytime hours as far as possible.
- ◆ At night, the nuisance created by audible warning signals on trucks and forklifts can be prevented by switching to a flashing light or 'broadband white noise' system.

Mitigation:

- ◆ Hearing protectors as standard PPE for workers in situations with elevated noise levels.
- ◆ Design facility so that buildings and rub halls acts as sound barriers between the residential area and the noise producing activities in the dry port.
- ◆ Place reefers so that their compressors face away from residential areas as far as practically possible.
- ◆ The addition of cladding (closed-off sides and top) on the reefer cat walks can act as noise barriers between residential areas and the reefer compressors.
- ◆ Should noise originating from the dry port continue to be a nuisance to nearby residential areas, changes to the boundary fence can be made to act as an additional noise barrier (e.g. stacked containers or boundary wall). This should be done in conjunction with Namport, as this will not only act as barrier for the dry port, but for all noise producing activities in the port.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

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

2.2.8 Dust and Air Quality

Reduced air quality as a result of windblown ore and chemical dust can cause health effects, especially through chronic inhalation of such dust. All chemicals and ore will however be transported and handled as break bulk (such as bags or crates), or containerised. This will limit the amount of dust which can be transported by wind.

During construction activities, additional dust may be produced from activities such as excavation. The entire site is however covered with interlocked paving, therefore dust and air quality impacts is expected to be minimal during construction phases.

Desired Outcome: To prevent nuisance and health impacts and to maintain the integrity of the built environment.

Actions

Prevention:

- ◆ Agency for Toxic Substances and Disease Registry (United States of America) sets the Minimum Risk Level of contaminants in air that is expected not have any health risk over a specified duration of exposure. Air quality at the site, or receptors on any part of the route of transport and at receptors may not increase above these limits.
- ◆ All chemical/ore bulk bags or containers must be inspected prior to handling to ensure they are not damaged. Forklift operators to be suitably trained to ensure cargo is carefully and safely handled.
- ◆ All truck loads must be suitably covered to prevent the escape of dust from the load. This include empty trucks that may still contain some dust.
- ◆ Appoint reputable contractors for transporting of ore and chemicals who prioritise a “zero dust policy”.
- ◆ All handling of bulk chemicals/ore which present a risk of windblown dust must be handled in an enclosed warehouse, to prevent dust from escaping the site.
- ◆ Bulk chemicals/ore which present a risk of windblown dust may not be handled in the open during periods of strong winds (>45 km/h).

Mitigation:

- ◆ Dust suppression in the warehouse and during construction activities when required.
- ◆ Cease any operations with immediate effect once dust plumes that cannot be contained becomes visible. Operations can commence once sufficient mitigation measures have been implemented or when the cause of dust disseminates. This includes operational processes such as handling and loading / offloading of ore at the bulk storage yard, transport through town, offloading in the port, etc.
- ◆ All trucks transporting cargo must be service regularly and make use of technology to reduce emissions. This include selective catalytic reduction, diesel particulate filters and diesel oxidation catalysts.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Any mineral ore that may be handled as loose product, must be sampled irregularly, once every 6 months, by an independent specialist for asbestos in the ore. If asbestos are detected, all operations must cease immediately and only be continued under very strict and approved health and safety procedures related to the handling of asbestos containing material.
- ◆ Any complaints received regarding ore / chemical dust and emissions along the transport routes and sites of handling of ore must be recorded, investigated and the problem rectified.
- ◆ Any incidents must be recorded with action taken to prevent future occurrences.
- ◆ A report should be compiled every 6 months of all incidents reported and monitoring performed. The report should contain dates when safety equipment and structures were inspected and maintained

2.2.9 Waste production

Various waste streams are and will be produced during the operational phase and development of the facility. Waste may include hazardous waste associated with the handling of hydrocarbon products and other chemicals and contaminated packaging material. Domestic waste is generated by the facility and related operations. Waste presents a contamination risk and when not removed regularly may become a fire hazard. Construction waste may include building rubble and discarded equipment contaminated by hydrocarbon products. Contaminated soil and water is considered as a hazardous waste. If correct measures are not followed, and if contaminated equipment is washed there, wash water from the proposed wash bay may become contaminated and end up in the municipal sewers.

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

Actions

Prevention:

- ◆ Waste reduction measures should be implemented and all waste that can be re-used / recycled must be kept separate.
- ◆ Ensure adequate disposal storage facilities are available.
- ◆ Ensure waste cannot be blown away by wind.
- ◆ Prevent scavenging (human and non-human) of waste storage.
- ◆ The consumer fuel installation should be according to SANS standards or better.
- ◆ The proposed wash bay should be designed according to municipal and Nampont regulations.
- ◆ A permit to discharge industrial effluent into the municipal sewers need to be obtained and adhered to for the proposed wash bay.
- ◆ All drains leading directly into sewers must be closed off, and locked where possible, to prevent any unwanted products from entering sewers should an accidental spill, pipe burst, valve malfunction, etc. occur. Where drains are present to drain wash water, these should only be opened during times of washing.
- ◆ Equipment contaminated with chemicals and hazardous substances may not be washed at the wash bay, unless contaminants can be effectively collected and disposed of as hazardous waste.

Mitigation:

- ◆ Waste should be disposed of regularly and at appropriately classified disposal facilities, this includes hazardous material (empty chemical containers, contaminated rugs, paper water and soil).
- ◆ See the material safety data sheets available from suppliers for disposal of contaminated products and empty containers.
- ◆ Liaise with the municipality regarding waste and handling of hazardous waste.

2.2.10 Ecosystem and Biodiversity Impact

The nature of the operational activities is such that the probability of creating a habitat for flora and fauna to establish is low. No significant impact on the biodiversity of the area is predicted as this is an existing operation and the site is void of natural fauna and flora. Future development may require an increase in lighting on the site at night. Excessive lighting used at night and especially those that are directed upwards may blind birds like flamingos that fly at night. This may result in disorientation of birds and collisions with structures. Further impacts will mostly be related to pollution of the environment.

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

Actions.

Mitigation:

- ◆ Report any extraordinary ecological sightings to the Ministry of Environment and Tourism.
- ◆ Mitigation 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.
- ◆ The establishment of habitats and nesting sites at the facility should be avoided where possible.
- ◆ Lights used at night should be directed downwards to the working surfaces.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ All information of extraordinary ecological sightings to be included in a bi-annual report.

2.2.11 Groundwater, Surface Water and Soil Contamination

Operations entail the storage and handling of various potentially hazardous substances (such as fuels and lubricants, and other chemicals) which present a contamination risk. Contamination may either result from failing storage facilities, or spills and leaks associated with the handling of hazardous substances. Such material may contaminate surface water, soil and groundwater. In an event of groundwater contamination, the shallow groundwater may lead to a rapid lateral spread of pollutants, especially hydrocarbons. This will further have potential impacts on underground utilities and may negatively impact neighbouring properties.

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

Actions

Prevention:

- ◆ Consumer fuel installation should be installed with proper spill control structures and procedures according to SANS standards or better.
- ◆ All fuelling and storage of hazardous substances should be conducted on spill proof surfaces provided for this purpose. E.g. Concrete slabs with regularly maintained seals between slabs.
- ◆ The procedures followed to prevent environmental damage during service and maintenance, and compliance with these procedures, must be audited and corrections made where necessary.
- ◆ Proper training of on-site personnel must be conducted on a regular basis (refuelling, handling of hazardous substances, spill detection, spill control).

Mitigation:

- ◆ Any spillage of more than 200 litre must be reported to the relevant authorities.
- ◆ Spill clean-up means must be readily available on site as per the relevant MSDS.
- ◆ Emergency Response Plans and Spill Contingency Plans must be in place and include all chemicals being handled. These should be updated as new chemicals are added to those being handled.
- ◆ Any spill must be cleaned up immediately.
- ◆ All hazardous waste, such as contaminated materials, hydrocarbons and empty chemical containers should be disposed of at a suitably classified hazardous waste disposal facility.
- ◆ To prevent the tearing of breakbulk bags a limit should be placed on stacking height during transport and storage. Only superior quality bags should be used.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ A report should be compiled bi-annually of all spills or leakages reported. The report should contain the following information: date and duration of spill, product spilled, volume of spill, remedial action taken, comparison of pre-exposure baseline data (previous pollution conditions survey results) with post remediation data (e.g. soil/groundwater hydrocarbon concentrations) and a copy of documentation in which spill was reported to Ministry of Mines and Energy.

2.2.12 Visual Impact

This is an impact that not only affects the aesthetic appearance, but also the integrity of the facility. The site is within an area zoned for industrial use, in the port of Walvis Bay, and falls in line with the development in the area. The facility and future development of the site falls in line with the urban character. The facility is however on the boundary of the port of Walvis Bay (industrial area) with residential properties opposite the site. A change in the landscape character as well as lighting used at night may therefore be aesthetically displeasing for residents in neighbouring properties. Should a noise barrier be required at the boundary fence of the property (such as a container wall), further visual impacts can be expected on nearby residential properties.

Current operations are kept tidy and neat (as documented during the site visit) which promotes effectiveness and pollution prevention while being aesthetically pleasing.

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

Actions

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.
- ◆ All structures and infrastructures constructed on site should be line with the visual character of the landscape as far as practically possible.
- ◆ All lighting used at the south eastern and southwestern boundary of the site (floodlights) should be directed away from the residential properties.
- ◆ Noise barriers should be designed / painted to align with the existing landscape character.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ A report should be compiled every 6 months of all complaints received and actions taken.

2.2.13 Cumulative Impact

Possible cumulative impacts associated with the operational phase include increase in traffic frequenting the site and along the sections of roads leading to the harbour and dry port due to the variety of developments in the area. This will have a cumulative impact on traffic flow on surrounding streets.

The increase of traffic and other noise generating activities in the area may further increase the noise impacts on residential properties. The cumulative effect of lighting on birds due to port related developments may also increase the risk of collisions and interference with bird flight paths at night.

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.
- ◆ Reviewing biannual and 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

Data Sources and Monitoring:

- ◆ Reviewing of bi-annual reports on all other impacts will provide insight into the cumulative nature of impacts and guide corrective action measures to be investigated and implemented.

2.3 DECOMMISSIONING AND REHABILITATION

Decommissioning is not foreseen during the validity of the ECC. 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. 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 Environmental Management Plan for the facility will have to be reviewed at the time of decommissioning to cater for changes made to the site and implement guidelines and mitigation measures.

2.4 ENVIRONMENTAL MANAGEMENT SYSTEM

The proponent could implement an Environmental Management System (EMS) 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 updated EMP, if properly implemented will help to continually minimise adverse impacts on the environment. Where impacts occur, immediate action must be taken to reduce the escalation of effects associated with these impacts. To ensure the relevance of this document to the specific stage of project, it needs to be reviewed throughout all phases.

The EMP should continue to be used as an on-site reference document during all phases of the 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 must be submitted to the Ministry of Environment, Forestry and Tourism every six months (bi-annually) to allow for the future renewal of the ECC.

4 REFERENCES

Coetzer W; Faul A; 2019 March; Botswana Dry Port Facility in the Port of Walvis.: Environmental Assessment Scoping Report - Update