APP-006548
CONSTRUCTION AND OPERATIONS OF A JETTY AND COMMISSIONING OF A FLOATING DRYDOCK IN WALVIS BAY

ENVIRONMENTAL MANAGEMENT PLAN

Prepared by:

Prepared for:

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Project:	**CONSTRUCTION AND OPERATIONS OF A JETTY AND COMMISSIONING OF A FLOATING DRYDOCK IN WALVIS BAY: ENVIRONMENTAL MANAGEMENT PLAN**	
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1 INTRODUCTION

Dormac Marine & Engineering Namibia (Pty) Ltd, hereafter referred to as the Proponent, intends to construct and operate a new jetty and commission a floating drydock at 5 Ben Amathila Street, Walvis Bay, Erongo Region (Figure 1-1). The project is planned on Erf 3688, which is owned by Namport and leased to the Proponent. The facility will focus on vessel repair, maintenance and engineering services supported by shore-based workshops and associated infrastructure, including general ship repair, mechanical and structural maintenance, surface preparation and coating activities, as well as fabrication and refurbishment of oil and gas equipment. General project components considered in this assessment include the construction, commissioning and operational phases, as well as potential future decommissioning activities.

An environmental clearance certificate (ECC) for the proposed construction and operation of the jetty and floating drydock is required as per the Environmental Management Act, Act No. 7 of 2007 (EMA). The Proponent appointed Geo Pollution Technologies (Pty) Ltd (GPT), as independent environmental consultant, to undertake an environmental scoping assessment (EIA) and to compile an environmental management plan (EMP) for the project. As part of the EIA process, a risk assessment was undertaken to determine the potential positive and negative impacts of the construction, operational and possible decommissioning phases on the environment, as defined in the EMA. This report presents the EMP, which outlines measures to prevent or mitigate potential negative environmental impacts while enhancing the project's positive outcomes.

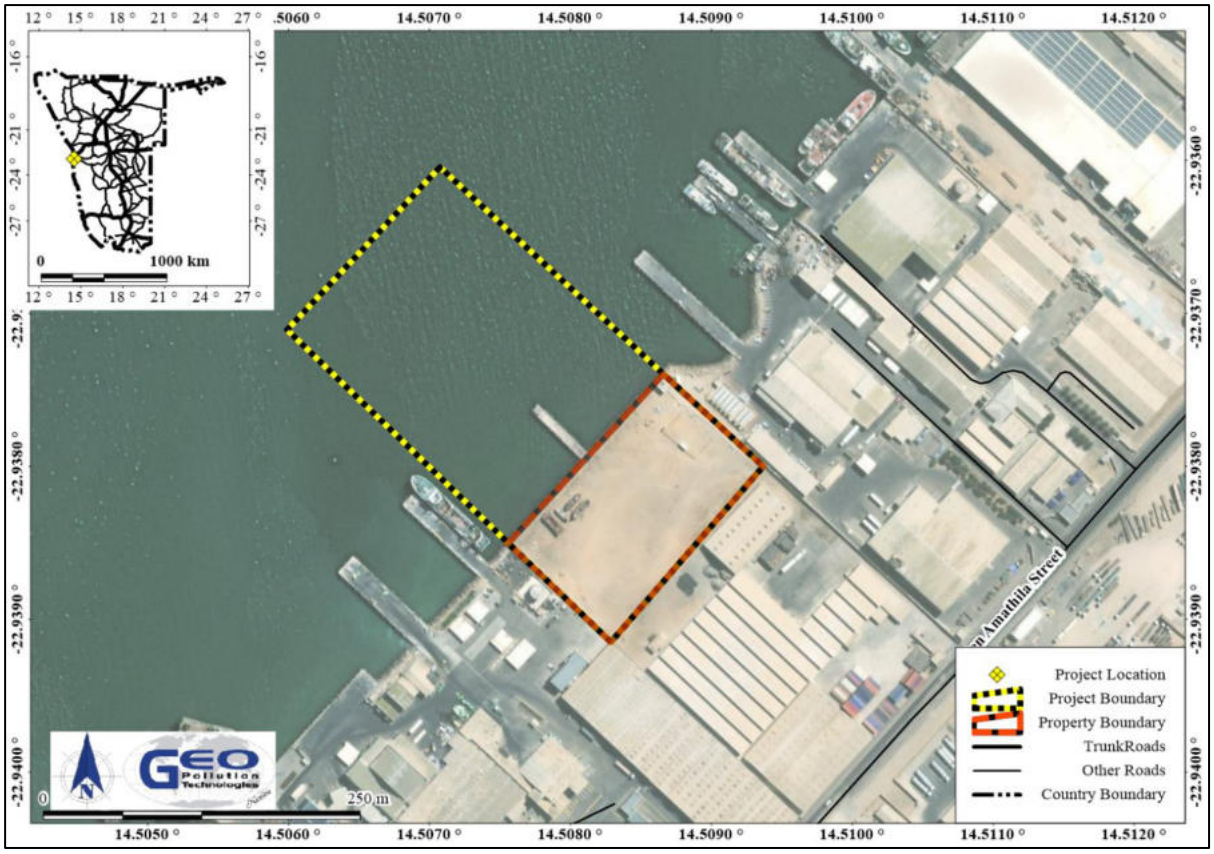

Figure 1-1 Project location

2 MANAGEMENT OF IMPACTS

The purpose of this section is to present an EMP outlining preventative and mitigating measures, based on the identified impacts.

2.1 Environmental Management Plan

The EMP provides management options to ensure impacts of the project 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 descriptions below. These management measures should be adhered to during the various phases of the operation of the project. This section of the report can act as a stand-alone document. All personnel taking part in the operations of the project should be made aware of the contents in this section, so as to plan the operations accordingly and in an environmentally sound manner.

The objectives of the EMP are:

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

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 impacts, risk rating of impacts as well as prevention and mitigation measures are listed below.

As depicted in the descriptions below, impacts related to the operational phase are expected to mostly be of medium to low 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

2.1.1 Planning

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

- Ensure that all necessary permits from the various ministries, local authorities and any other bodies that governs the project are in place and remains valid.
- Ensure all appointed contractors and employees enter into an agreement which includes the EMP. Ensure that the contents of the EMP are understood by the contractors, sub-contractors, employees and all personnel present or who will be present on site.
- Make provisions to have a health, safety and environmental (HSE) coordinator to implement the EMP and oversee occupational health and safety as well as general environmental related compliance at the site. Provision should be made for monthly environmental performance audits and reports during the initial phases.
- Have the following in place where relevant to deal with all potential emergencies:
  - Risk management / mitigation / EMP/ emergency response plan and HSE manuals
  - Adequate protection and indemnity insurance cover for incidents;
  - Relevant safety standards;
  - Procedures, equipment and materials required for emergencies.
- Establish and / or maintain a reporting system to report on aspects of construction activities, operations and decommissioning as outlined in the EMP.

- Prepare and submit EMP compliance reports to the Ministry of Environment, Forestry and Tourism (MEFT) in accordance with the conditions of the ECC.
- Appoint a specialist environmental consultant to update the EIA and EMP and apply for renewal of the ECC in accordance with the conditions of the ECC.

2.1.2 Ship Repair and Maintenance Services

The proposed facility will provide a platform for ship repair and maintenance in Walvis Bay. Activities such as grit blasting, painting, welding and mechanical repairs are essential to maintain the functionality, efficiency and safety of maritime vessels. By offering these services locally, the project will help to reduce waiting times for repairs, increase the availability of service slots, and minimise the need for vessels to divert to other ports. This, in turn, supports Namibia's maritime economy and strengthens Walvis Bay's position as a regional repair hub.

While ship repair and maintenance activities are associated with environmental, health and safety risks, these can be effectively managed. Appropriate management and mitigation measures will be implemented to ensure that operations are undertaken in a safe, controlled and environmentally responsible manner, thereby allowing the positive economic and operational benefits of the facility to be realised.

Desired Outcome: Provision of ship repair and maintenance services.

Actions:

Enhancement:

- Maximise utilisation of the floating drydock and associated workshops to increase local and regional capacity for ship repair and maintenance, thereby reducing waiting times and ensuring that more vessels can be serviced in Walvis Bay rather than diverting to other ports.
- Implement adequate health, safety and environmental policies and procedures to ensure the operations of the facility, and provision of ship repair and maintenance services, can continue without disruptions.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- The number of vessels handled on the floating drydock to be included in a six monthly environmental monitoring report.

2.1.3 Employment

The construction and operation of the facility will create local employment opportunities and sustain existing skills within Walvis Bay's industrial sector. During dredging operations, a small specialised crew will be required. If an international dredging contractor is appointed, the dredging vessel will likely be operated by a foreign crew, while local Namibian companies and consultants will provide support services such as logistics, environmental monitoring, and maintenance, thereby creating and sustaining local employment.

Operators in Namibia currently have the capacity to conduct only minor dredging activities along quays and jetties; therefore, major dredging works are expected to be undertaken by an international contractor. All foreign employees will be required to obtain the necessary work permits before commencing any activities in Namibia.

Through the development and operation of the new jetty and floating dry dock, employment and service opportunities within the Port of Walvis Bay will be indirectly supported across a range of marine engineering, logistics, and port-related industries.

Desired outcome: Provision of employment to local Namibians and adhering to Namibian legal requirements with respect to work permits.

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 practise must be justified.
- Ensure work permits for foreign employees are obtained prior to calling at the port.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- Employee contracts on file
- Bi-annual reporting, whichever comes first, based on employee records that provides details on number of employees and demographic profile such as male vs. female, local vs. foreign, and disabled employees.

2.1.4 Skills, Technology and Development

During the different phases of construction and operation, training will be provided to employees. Skills will be transferred to unskilled and semi-skilled workers. The development of people and technology within the marine engineering sector forms an important component of economic growth, promoting local expertise and sustainable industrial development in Walvis Bay.

Desired Outcome: Increasing the skills of local Namibians, as well as development and technology advancements in associated 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 practise must be justified.
- Skills development and improvement programs to be made available as identified during performance assessments.
- Training and skills development must be focussed on Namibians.
- Employees to be informed about parameters and requirements for references upon employment.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

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

2.1.5 Revenue Generation

An increase in skilled and professional labour will result from the continuing operations, and related wages and salaries will be paid. Revenue will be generated through the contracting of port and related contractor services. During dredging operations, resources and services will be procured locally, contributing to the economy of the town, region, and Namibia.

Desired Outcome: Contribution to the local and national economy. Contribution to national treasury.

Actions

Enhancement:

- The Proponent must employ local Namibians and source Namibian contractors, goods and services as far as is practically possible. Deviations from this practise must be justified.
- Resources and services must be procured locally, if available. Deviations from this must be justified.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Bi-annual summary report based on employee records.

2.1.6 Demographic Profile and Community Health

The operations of the facility will be reliant on labour once the facility is constructed and operational. Community health may be exposed to factors such as communicable diseases, including HIV/AIDS, and alcohol or drug abuse, which can be associated with the increased spending power of the labour force. The presence of foreign personnel in the area may also increase the cumulative risk of communicable diseases in Walvis Bay.

During dredging activities, there may be an influx of foreign crew members operating the dredging vessel. Most of these personnel will remain on the vessels and may only visit the town for short periods, while management staff may be stationed in town. Additional contractors, employees, or consultants may be sourced locally and could require temporary accommodation and offices in Walvis Bay. Due to the scale and duration of dredging, the influx of people is not expected to cause a significant or lasting change in the demographic profile of the local community, nor result in notable instances of socially deviant behaviour. The potential impact is further reduced as employment will be sourced locally as far as possible.

Positive impacts will relate to the increased economic resilience and improved livelihoods of employees and contractors.

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 local people from the area where possible, deviations from this practise should be justified appropriately.
- Adhere to all municipal by-laws relating to environmental health which includes, but is not limited to, sanitation requirements for workers on site.
- Appointment of reputable contractors.

Mitigation:

- Educational programmes for employees on HIV/AIDs and general upliftment of employees' social status.

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.

2.1.7 Health, Safety and Security

Activities associated with the construction and operational phases of the facility will rely on human labour and therefore expose workers to various health and safety risks. During construction, risks include working at heights, use of heavy machinery, and exposure to dust and noise.

During operations, risks will relate to the use of machinery and tools, unsafe stacking of materials, and handling of hazardous substances such as paints, solvents, and blasting grit. In the workshop, welding, grinding, and fabrication activities may pose additional risks if not properly managed. If not contained, windblown dust and grit may also pose a health risk to nearby receptors.

The Namibian coast is characterised by very cold water and rough conditions. Falling from the quay, the dry dock, or dredging platform and being exposed to cold water may quickly result in hypothermia, which can be fatal.

During dredging, there is a potential risk of exposure to hydrogen sulphide and methane gas. Hydrogen sulphide is especially dangerous and can be fatal at concentrations between 300 and 600 ppm. It is first detected as a rotten egg smell, but prolonged exposure causes loss of smell, creating a false sense of safety.

Security risks may include unauthorised entry, theft, or sabotage, and will be managed through access control and on-site supervision.

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

Actions

Prevention:

- All Health and Safety standards specified in the Labour Act, or better, should be followed.
- Clearly label dangerous and restricted areas as well as dangerous equipment and products.
- Provide all employees with required and adequate personal protective equipment (PPE) including dust masks and protective clothing for workers in close proximity to, or working with, the dust producing equipment. Accidental inhalation, ingestion, dermal or eye contact with dust must be prevented at all times.
- Ensure that all personnel receive adequate training on operations of equipment / handling of harmful materials.
- Equipment on site must be stored in a way that does not encourage criminal activities (e.g. locked away to prevent theft).
- Security procedures and proper security measures must be in place to protect workers.
- Strict security that prevents unauthorised entry into the site.
- The build-up of static electricity must be prevented by grounding the surface to be blasted.
- Appointment of a reputable dredging contractor with a known history of responsible and safe operations.
- All seafaring vessels used must have all the required safety and emergency equipment as per maritime standards.
- To prevent and/or mitigate the impacts of hydrogen sulphide and methane gas, the following must be in place:
    - Ensure that the dredging and support vessels are equipped with appropriate technology, and correct placement of such technology, to avoid poisonous gases from affecting crew.
    - Ensure that appropriate breathing apparatuses are available to crew to protect them from any dangerous gas that is liberated from the submerged and dredged material.
    - Continuous hydrogen sulphide monitoring must be performed in all areas identified to be at risk of being engulfed by the gas. This include real time remote monitoring or portable (handheld) monitoring devices to be carried on person. Areas to be monitored include all areas of the vessel that are at risk and on the drydocks, quays, jetties and berths, when dredging is in close proximity thereof.
    - Near the quays, jetties and berths, dredging must be done mainly while there are fewer activities.

- Seafaring traffic may not come within 100 m of the dredger unless authorised to do so and must, if possible, pass upwind of the dredger.

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.
- Implement and maintain an integrated health and safety management system, to act as a monitoring and mitigating tool, which includes operational, safe work and medical procedures, permits to work, emergency response plans, housekeeping rules, MSDS's and signage requirements (PPE, flammable etc.).
- Implement emergency response procedures in case of incidents.
- Emergency wash stations in case of accidental exposure to chemicals or dust.
- If sensors are triggered, dredging must stop and gas levels allowed to drop to acceptable safe levels. If required, the dredging vessel must be manoeuvred away from the area where high gas levels are detected.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- Industry standards and protocols, etc.
- An up-to-date health and safety file to be maintained.
- Any incidents or complaints must be recorded with action taken to prevent future occurrences.
- A bi-annual report should be compiled of all incidents reported. The report should contain dates when training were conducted and when safety equipment and structures were inspected and maintained, incidents or complaints received, including action taken to prevent future occurrences, must be included.

2.1.8 Road Traffic

The construction of the jetty and associated support infrastructure will increase the number of trucks accessing the area for the delivery of equipment, construction materials, and machinery. This will result in higher traffic volumes, particularly of heavy motor vehicles, in nearby streets and along the shared panhandle access during the construction phase. On unsealed or partially sealed sections of the panhandle, increased traffic may generate dust that could be entrained in the wind and carried towards neighbouring properties.

During operations, a further increase in traffic is expected due to the addition of the floating dry dock and associated vessel services. Normal daily activities are not expected to have a significant impact on regional traffic conditions. However, heavy vehicle movements may contribute to road surface wear, particularly at turning points and intersections, may generate dust along the shared panhandle access if not adequately managed, and could temporarily obstruct access to neighbouring businesses or increase the risk of minor traffic incidents.

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

Actions

Mitigation:

- Trucks collecting waste produced from maintenance dredging should not be allowed to obstruct any traffic in surrounding areas and the town.
- 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 help to mitigate traffic impacts.
- Implement and enforce speed limits for vehicles on the shared panhandle access and internal roads to reduce dust generation and improve safety.
- Avoid idling and queuing of vehicles along the section of the panhandle adjacent to neighbours loading and storage areas.
- All present and future users of the shared panhandle must devise a strategy to prevent dust from traffic on the panhandle. This may entail paving or surfacing the panhandle.

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 bi-annual report should be compiled of all incidents reported, complaints received, and action taken

2.1.9 Maritime Traffic

Marine traffic in the area may experience temporary delays or navigational restrictions during the construction and commissioning of the jetty and floating dry dock. The presence and movement of construction vessels, barges, and equipment in the area may increase the risk of collisions or near misses, particularly if navigational warnings are not properly issued or if vessels without adequate communication systems enter the area.

The commissioning and operation of the floating dry dock may also temporarily affect vessel movement within the nearby navigation channel. All activities will therefore be coordinated with Namport's port control to ensure safe navigation and to minimise interference with other maritime operations.

Desired Outcome: Minimum impact on seafaring traffic and no accidents.

Actions

Mitigation:

- Contracting a Trailing Suction Hopper Dredger, if suitable to the task, will minimize delays for seafaring vessels.
- Proper communication, management and planning will largely prevent traffic impacts.
- Timely issuing of navigational warnings (Namport).
- Planning and communication with regular provision of updates to Namport (Port Captain) on the dredging schedule.
- All communications, navigational and warning systems on the vessel in working order and regularly tested and maintained.
- Should an incident occur, it must immediately be reported to the Port Captain, followed by a detailed report within 24 hours, and corrective action should be taken to prevent any future occurrences of such events.
- All clients must adhere to all Namport regulations and follow all procedures for reporting any ship movement to Port Control who will direct marine traffic and give permissions for movement.

Data Sources and Monitoring:

- Part III of the regulations proclaimed under the Namibian Ports Authority Act; Merchant Shipping Act; Marine Traffic Act.; Convention on the International Regulations for Preventing Collisions at Sea; International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
- Ship's log to be duly maintained.
- Any complaints or incident reports received from seafaring traffic, with regard to dredger operations, should be recorded together with corrective action taken and measures implemented to prevent impacts from repeating itself.
- Close-out report or bi-annual reporting, whichever comes first, on all seafaring traffic related incidents reported, complaints received, and action taken.

2.1.10 Air Quality Related Impacts

Reduced air quality may result from pulverised blasting grit, paint particles, and other materials released during surface preparation and coating activities. These emissions can become airborne and be dispersed under strong wind conditions, potentially causing localised health impacts. The effect is expected to be temporary and dispersible due to the prevailing southwesterly winds in Walvis Bay. Under the dominant south to southwesterly winds in Walvis Bay, dust generated on site is likely to be carried predominantly northwards and northeastwards across the harbour basin and nearby industrial properties. During periods of northerly, northwesterly or westerly winds, dust may be transported towards neighbouring properties.

Windblown dust may also affect air quality and pose health risks, particularly through chronic inhalation of fine particulate matter such as $PM_{2.5}$ and PM_{10}, which may contain harmful or irritant substances from grit blasting operations. Proper containment, netting, and dust control measures must be implemented to reduce this risk.

Given the immediate proximity of the neighbouring food-labelling, storage and loading areas, even low concentrations of dust, paint overspray or fumes could be problematic. Without adequate prevention and mitigation, there is a risk of non-compliance with stringent food safety standards and potential failure of external audits. The impact significance before mitigation is therefore considered higher for this specific receptor than for the general industrial surroundings.

Repair and fabrication activities in the workshop will generate localised emissions of welding fumes, grinding dust, paint mists and solvent vapours. These are mainly occupational health hazards, however, uncontrolled release through open doors or low-level vents could contribute to off-site dust, fumes and odours.

During dredging activities, there is a risk of gaseous emissions at the onshore disposal site. Hazardous gasses are likely to be hydrogen sulphide and methane. Apart from being foul smelling, it may also pose health risks to any nearby people.

Desired Outcome: To protect workers, nearby receptors and adjacent food-handling facilities from exposure to harmful dust, fumes and odours and to minimise atmospheric emissions, including greenhouse gases, through the application of best practicable dust, fume and odour prevention, control and monitoring measures.

Actions

Mitigation:

- Due to the potential toxic nature of dust created, its dispersion in the air should be mitigated as much as operationally possible.
- Use well-maintained, fuel-efficient plant and equipment, and connect vessels to shore power where possible to reduce exhaust emissions.
- Enclose the front and rear ends of the floating dock with mesh netting or tarpaulins during blasting and spray painting and install side screening or tented work areas as required to contain dust and overspray.
- Only trained operators may conduct blasting activities. This should include minimising unnecessary dust plumes by only directing the nozzle downwards, closing the nozzle immediately when blasting is stopped or when the area of blasting is changed.
- Install and use real-time on-site anemometer. Suspend grit blasting and spray painting when wind speed exceeds 25 km/hr. Potentially then switch to alternative blasting methods.
- Care must be taken during northerly, northwesterly and westerly wind conditions, when emissions may be transported towards on land receptors; under such conditions blasting and spray painting must be properly managed and monitored.
- Prefer low-dust methods (e.g. wet/slurry, UHP or vacuum-assisted blasting) and low-VOC / high-solids coatings where technically feasible.
- Implement and enforce a housekeeping programme for operational areas, including regular cleaning of hardstandings and access areas used by Dormac.

- Install and operate real-time air quality monitoring stations on the shared boundaries with neighbours and on the top of the floating drydock to measure, as a minimum, wind direction and speed and particulate matter ($PM_{2.5}$ and PM_{10}).
- Undertake all routine repair, fabrication and manufacturing activities (welding, grinding, cutting, small-scale painting) inside the enclosed workshop, not in open yard areas, except where components are too large to be handled indoors, in which case temporary tenting / shrouding and the same air-quality controls must be applied.
- Restrict spray painting in the workshop to a dedicated booth or curtained area with extraction and appropriate filtration; use low-VOC, high-solids products where technically feasible.
- The World Health Organization - Hazard prevention and control in the work environment: Airborne dust (WHO, 1999) should be consulted.
- See section 2.1.7 for preventative and mitigation measures related to hydrogen sulphide and methane.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- Any complaints received regarding air quality must be recorded, investigated and the problem rectified.
- All air quality related incidents (including exceedance of internal trigger levels, failure of shrouds or barriers, or non-compliance with the wind-speed rule) must be recorded together with the actions taken to prevent recurrence
- Contract an independent third party to devise and implement a real-time air quality monitoring program. Data must be logged and correlated with site activities, meteorological conditions and complaints received.
- As part of the air quality monitoring program, deploy dust monitoring along the property boundary, for at least the initial 12–24 months of operation to measure longer-term dust deposition rates. Where required, samples must be analysed for relevant contaminants (e.g. metals and paint-related constituents) to assess the presence of harmful particulates and help distinguish between operational and background dust sources.
- Any incidents must be recorded with action taken to prevent future occurrences.
- A bi-annual report must be compiled summarising all incidents, complaints and monitoring results. The report must include dates when dust-control structures (e.g. shrouds, barriers), air-quality monitoring equipment and safety equipment were inspected, maintained or repaired, and must be used to review the effectiveness of mitigation measures and identify any required improvements.

2.1.12 Fire

Operational activities at the facility may increase the risk of fire if proper maintenance, housekeeping, and handling procedures are not followed. Some of the chemicals and materials used on site, such as paints, solvents, and lubricants, are flammable and must be stored and handled safely.

The facility borders an existing consumer installation to the north-east as well as to the south west, which represents an additional fire and safety risk due to the presence of combustible materials. Any accidental ignition or fuel spillage from that installation could potentially affect adjacent properties, including the facility.

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

Actions:

Prevention:

- Prepare and regularly update the firefighting and prevention plan and equipment according to the materials stored on site, keeping in mind the activities on neighbouring properties.
- Share the requirements for firefighting on site with Namport.
- Ensure all materials are stored strictly according to MSDS instructions. This include segregation of incompatible products.
- Maintain regular site, mechanical and electrical inspections and maintenance. This should include ensuring that all grounding (earthling) structures are in place.
- Specific Firefighting and spill prevention plan for the removal of the tanker jetty should be drafted and approved before the removal of the old tanker jetty can commence.
- Inspect fuel line on premises for any residual fuel.
- Do not remove any pipes or fuel lines that still contain hydrocarbons.
- Clean all spills / leaks immediately.
- Stop operations if dust containment fails and dust becomes airborne. Operations can continue once the cause is rectified.
- Ensure sufficient firefighting and fire prevention measures are in place for the specific products being stored and handled on site. This includes specific fire suppressants compatible with the materials used/stored.
- Real-time explosimeter monitoring should be conducted on the dredging vessel or during operations where explosive conditions may be present.

Mitigation:

- A holistic fire protection and prevention plan is needed for flammable products. This plan must include an emergency response plan, firefighting plan and spill recovery plan, and should include specific substances handled at the site. The plan should consider risks posed to and by neighbouring properties.
- Maintain firefighting equipment, implement good housekeeping and conduct personnel training (firefighting, fire prevention and responsible housekeeping practises).
- Proper communication systems between neighbors and the Proponent. Neighbors with fuel installations must prevent fuel from spreading towards the facility and must inform the Proponent as priority of any fuel spillage. Employees to abandon all work on the floating docks and evacuate all staff and visitors to a safe area.
- If fuel is observed on water the same procedure must be followed.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

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

2.1.13 Noise and Vibration

Noise pollution will occur during both the construction and operational phases of the facility. Construction activities such as demolition, piling, and excavation may generate excessive noise and ground-borne vibrations, which could cause temporary nuisance to nearby receptors and potential hearing risks to workers if not properly managed.

During operations, noise will result from compressors, high-pressure blasting, welding, and mechanical repairs. Vibration from blasting and machinery operation may affect the hands and arms of workers. As the site is located within an industrial and port-related area, noise impacts are expected; however, the cumulative noise levels from surrounding port operations may still be a nuisance to nearby residential areas. The operation, maintenance, or upgrade phases may also generate short-term increases in noise levels.

The noise and vibrations generated by the dredging vessel and its operations may impact both the crew and marine organisms, particularly marine mammals. Different areas on board the vessel will expose crew members to varying levels of noise and vibration, for example, machine rooms are expected to be much noisier than accommodation areas. Continuous exposure to loud noise can lead to hearing impairment, while vibration can cause hand–arm or whole-body fatigue and related health effects.

Under normal operational conditions, and considering the use of modern dredging equipment and technologies, noise and vibration generated by dredging activities are not expected to have a significant impact on marine mammals but may temporarily disturb or displace them. Similarly, birds feeding in the area may temporarily move away during dredging operations. Due to the limited footprint of maintenance dredging, birds on nearby islands are not expected to be affected.

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

Actions

Mitigation:

- The Health and Safety Regulations of the Labour Act and World Health Organization (WHO) guideline on maximum noise levels (Guidelines for Community Noise, 1999) to prevent hearing impairment for workers on site and not to be a nuisance to communities should be considered during the construction and operational phases.
- Confine noise generating operational activities to daytime hours as far as possible.
- Hearing protectors must be issued as part of PPE.
- Mechanisms to reduce vibration impact must be employed. This includes frequently rotating operators of grit blasting equipment and wearing of PPE such as vibration absorbing gloves.
- Hearing protectors as standard PPE for workers in situations with elevated noise levels.
- All machinery must be regularly serviced to ensure minimal noise production. To reduce vibration levels, it is recommended that all machinery and vehicles be maintained in a good condition and that a maintenance record be kept.
- Any machinery and vehicles that cause excessive vibrations should be given defect notices and taken off site immediately. Machinery and/or vehicles may only be used again on site once they have been serviced and approval has been granted by the site supervisor.
- Unnecessary vibrations can be minimised by ensuring that no machinery or vehicles are left idling when not in use.
- The appropriate and correct placement of specific work activities can ensure the reduction of handling of machinery that cause heavy vibrations.
- Ensure personnel running the equipment are trained accordingly so that machinery is used properly.
- Pre assessment to allow for mitigation measures for any elevated levels of vibrations should take place if there is any suspicion that there may be excessive vibrations levels onsite during construction. These mitigation measures should then be in accordance with local regulations and standards.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- International Maritime Organization Code on Noise Levels on Board Ships (Resolution MSC.337(91); ISO 21984:2018 Ships and marine technology — Guidelines for measurement, evaluation and reporting of vibration with regard to habitability on specific ships; International Labour Conference: Maritime Labour Convention, 2006; IMO MEPC.1/Circ.833: Guidelines for the Reduction of Underwater Noise from Commercial Shipping to Address Adverse Impacts on Marine Life; World Health Organisation Guidelines on Community Noise
- Health and Safety Regulations of the Labour Act and WHO Guidelines.
- Maintain a complaints register.
- Bi-annual report on complaints and actions taken to address complaints and prevent future occurrences.

2.1.14 Waste Production

Various waste streams will result from the operational phase and development of the facility. Waste may include hazardous waste associated with the handling of hazardous products and contaminated packaging material (e.g. during operations and maintenance). Hull scraping and pressurised cleaning with water produces organic waste as well as water potentially contaminated with paint containing anti-biofouling chemicals such as tributyltin (TBT). Blast material consisting of used blasting grit and dust of removed materials (i.e. paint, rust, etc.) are produced and is a potentially toxic waste that must be disposed of in an appropriate manner. Sediment in the vicinity of the drydock may become contaminated over time due to dust fallout and industrial pollution (not restricted to the Proponent). Domestic waste will be generated by the facility and related operations. Waste presents a contamination risk and when not removed regularly, may become a fire hazard. Contaminated soil and water is considered as a hazardous waste.

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

Actions

Prevention:

- Utilise blasting grit that contains the minimum concentrations of harmful substances.
- Waste reduction measures should be implemented and all waste that can be re-used / recycled must be kept separate.
- Ensure adequate temporary waste storage facilities are available.
- Ensure waste cannot be blown away by wind.
- Prevent scavenging (human and non-human) of waste.
- Trucks transporting waste must be covered to prevent waste from escaping during transport.

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).
- Due to the potential toxic nature of blast material, it should be disposed of in an appropriate way at an appropriately classified waste disposal facility. Material Safety Data Sheet instructions for disposal should be followed.
- Due to the potential toxic nature of dredged sediments, it should be sampled and analysed prior to dredging to determine disposal requirements.
- Hull wash water and contaminated runoff collected in ballast / settlement tanks must be allowed sufficient residence time for solids and sludge to settle before any discharge.
- Settled sludge from ballast / settlement tanks must be removed frequently and disposed of as hazardous waste at an appropriately classified waste disposal facility.
- Clarified supernatant water may only be discharged to the harbour if it is free of visible oil, grit and paint residues and in accordance with the Water Act discharge requirements; contaminated water that does not meet these requirements must be pumped to shore for appropriate treatment or disposal**.**
- Liaise with the municipality regarding waste and handling of hazardous waste.
- To prevent people from using potentially contaminated containers for transport or holding of drinking water, all containers that will be discarded must be crushed or punctured prior to disposal.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

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

2.1.15 Ecosystem and Biodiversity Impact

The nature of the operational activities is such that the probability of creating a habitat for terrestrial flora and fauna to establish is low. No significant impact on the terrestrial biodiversity of the area is predicted as the site is void of natural terrestrial fauna and flora. Further impacts will mostly be related to pollution of the marine environment.

Dredging pose risks to marine life. Potential negative impacts of dredging include habitat destruction, smothering of benthic communities due to settling of suspended particulate matter and dumping of dredged material at the disposal site, possible temporary displacement of animals (including birds) from the areas that are dredged, marine mammal strikes by the vessels or their propellers, and reduced water quality due to the suspension of particulate matter or through pollution.

Ships' ballast water may result in the possible introduction of exotic or invasive species that may have significant impacts on local community structure and functioning. This is not an impact that is unique to dredging vessels, but can result from any international seafaring traffic visiting Namibian waters.

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

Actions.

Mitigation:

- Report any extraordinary ecological sightings to MEFT.
- Mitigation measures related to waste handling and the prevention of groundwater, surface water and soil contamination should limit ecosystem and biodiversity impacts.
- Prevent scavenging of waste by fauna.
- The establishment of habitats and nesting sites at the facility should be prevented where possible.
- Clearly define the area to be dredged and monitor the dredging contractor's adherence to dredging only this area in order to minimize the impact footprint.
- Limit dredging and disposal to within the boundaries of the areas defined by Namport.
- Make use of a marine mammal observer to identify any animals that may be within a collision course with moving vessels and take evasive action.
- If any mortalities in marine fauna are observed at or around the dredging location, all dredging activities should be ceased and the cause investigated. Dredging can continue once it is determined to be safe to do so.
- Exchange ballast water as per set IMO guidelines.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- International Convention for the Control and Management of Ships' Ballast Water and Sediments; International Convention for the Prevention of Pollution from Ships (MARPOL); Namport operational procedures and emergency response plans
- Record all ballast water exchange details and specifically location.
- During disposal of sediments, record the start and end time of disposal and submit records to Namport on a daily basis.
- Record and marine mammal sightings and/or collisions and any other significant encounters or observations of animals and birds (including sick or dead animals) and report these to the local offices of the MEFT and the Ministry of Agriculture, Fisheries, Water and Land Reform (MAFWLR).
- Close-out report or bi-annual reporting, whichever comes first, of all record keeping, including corrective action taken.

2.1.16 Water resources, Surface Water and Soil Contamination – Construction and Operations

Construction activities may result in spillage of chemicals or fuels and this can contaminate soil and surface water. Grit blasting activities will take place within a drydock that is closed off using mesh. Dredging activities will disrupt the sediment. Pollution of soil and surface water is thus likely. Dust that is not contained can reach sensitive receptors, like the nearby ocean, during times of strong wind. Oil, hydraulic fluid and fuel leaks from vehicles may also present a pollution risk.

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

Actions

Prevention:

- Regularly inspect and maintain all infrastructure, to minimize the chances of infrastructure failure. Training of operators must be conducted on a regular basis to limit product containment damage due to incorrect handling.

Mitigation:

- Clean-up action must be taken immediately for all instances where chemicals or dust is not contained (e.g. spillages and torn bags) or spillages occur (e.g. trucks leaking fuel or oil, or paints and solvents during construction, maintenance and painting of vessels)
- Proper containment of blasting dust, to mitigate dust blown into the surrounding environment.
- During blasting and spray painting mesh nets must be suspended at the front and rear ends of the drydock to contain dust and spray paint.
- Grit blasting must be stopped if excessive dust plumes originate from the drydock area.
- During blasting all recesses on the dock must be adequately covered to prevent any contaminants from entering the water when the dock is submersed.
- After grit blasting and before the drydock is submerged the entire working platform must be cleaned to ensure no residue dust, grit and other contaminants enter the ocean.
- Before the start of operations, establish a monitoring program to monitor pollution. This must include determining baseline conditions prior to operations. Monitoring should be conducted on a quarterly basis. The following parameters should be investigated: Tributyltin, Cadmium (Cd), Mercury (Hg), Copper (Cu), Chrome (Cr), Lead (Pb), Zinc (Zn), Arsenic, Nickel, Barium (Ba), Beryllium (Be), Hydrocarbons and PAHs and Turbidity or suspended material.
- Updated chemicals of concern should be identified based on new antifouling paint content and grit used.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- The procedures followed to prevent environmental damage during service and maintenance, and compliance with these procedures, must be audited and corrections made where necessary.
- A report should be compiled of the baseline conditions.
- Bi-annual reporting on the monitoring program and of any spills. The report should contain the following information: date and duration of spill, product spilled, volume of spill, remedial action taken, etc.

2.1.17 Water Resources, Surface Water and Soil Contamination - Dredging

Dredging can result in the excessive suspension of particulate matter in the water column. This may negatively affect aquatic organisms and seawater intakes. Excessive suspension of particulate matter in the water column can especially occur where very fine, diatomaceous oozes are present. Agitation of the seabed by the dredger, will be the main cause of suspension of particulate matter. The use of a plain suction dredger, and the disposal of sediments via a pipeline on land, will significantly reduce the suspension of sediments if operated correctly.

Impacts of increased suspension of such particulate matter include: reduced light penetration in the water column and thus reduced photosynthesis by algae resulting in less oxygen production; clogging of fish gills, inundation of benthic organisms when suspended particles settle to the seafloor; and increasing the bioavailability of toxic elements that may occur naturally in, or may have accumulated through anthropogenic impacts in, the substrate. Increased bioavailability of heavy metals like cadmium or lead for example, may result in reproductive abnormalities and reduced fertility, which may put the local food web at risk. It may also accumulate in organisms, especially filter feeders like mussels.

Various preventative and mitigating methods can be employed to prevent excessive suspension of particulate matter. Some of these are listed below, but it is important to note that not all of the modifications or procedures mentioned should necessarily be employed. It is the responsibility of the contractor, in consultation with the Proponent, to determine which modifications or procedures would best prevent particulate matter suspension, while keeping in mind operational timeframes and financial feasibility. Also, dredging techniques that result in lower suspension of particulate matter, that, as a result of the techniques required to lower such suspension occur over longer periods of time, may have more serious adverse effects. This is because acute, high level exposure to negative impacts may have less consequences than, chronic low level exposure.

Environmental conditions that may increase the risk of elevated total suspended solids reaching the sensitive receptors include: tidal conditions; rough sea conditions (high wave/swell action); wind conditions. Total suspended solids is determined through turbidity measurements (nephelometric turbidity units (NTU)) that can be converted to total suspended solids (mg/ml) through turbidity sensor calibration techniques.

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

Actions

Prevention:

- Appointment of a reputable dredging contractor with a known history of environmental responsibility.
- Determine the baseline turbidity / TSS conditions at strategic locations throughout the harbour for at least one month prior to dredging. The results must serve as baseline for real time turbidity monitoring as indicated in the dredging contractors responsibility below.
- For any once-off dredging exercise targeting more than 5,000 m^3 of material, appoint an independent specialist to determine baseline water quality conditions by analysing for elevated levels of chemicals of concern (see list below).
- Prior to dredging, devise a turbidity monitoring and water sampling protocol, with the aim of providing information with regard to spread of suspended solids and contamination in the water column. The data generated must inform the dredging operator and Namport on the effectiveness of preventative and mitigation measures aimed at preventing the mobilisation and spread of particulate matter and contaminants. Real time turbidity monitoring can act as a warning system for situations where excessive suspension of particulate matter occur. As real-time water quality (chemicals of concern) monitoring is not possible, turbidity monitoring must act as a pro-active approach to prevent the spread of contaminants while chemical of concern monitoring, with delayed results, will serve to guide future dredging, rather than dictating current dredging.
- Continue the turbidity monitoring during dredging as per the dredging contractor's responsibility outlined below.

- Water samples must be analysed for at least: tributyltin (TBT), cadmium (Cd), mercury (Hg), copper (Cu), chromium (Cr), lead (Pb), zinc (Zn), arsenic (As), nickel (Ni), polychlorinated biphenyls (PCBs), total petroleum hydrocarbons (TPH) and polycyclic aromatic hydrocarbons (PAHs)
- The analysis must be carried out by an accredited laboratory, using suitable analytical methods with a detection limit below the current BCLME maximum limit values for the given parameter.
- Compare results with BCLME guidelines (if available) and compile baseline report.
- Repeat sampling and analysis during dredging as per the dredging contractor's responsibility outlined below.
- Appoint an independent consultant to conduct real-time turbidity (TSS) monitoring specifically aimed at protecting sensitive receptors (fish factory processing water abstraction points).
- The following TSS concentrations for the upper portion (-3 m) of the water column are recommended as threshold values for determining responses to real time monitoring:
    - < 20 mg/l or 80th percentile of background levels – desirable low risk scenario.
    - 20 – 80 mg/l for continuous periods of three days or longer - lower threshold of possible adverse ecological effects.
    - 80 – 100 mg/l for more than six hours - probable adverse effects, mitigation measures must be considered.
    - 150 mg/l - proven negative impacts, cease dredge operations.
- The TSS of the water at monitoring locations must not exceed 80 mg/l or the 80th percentile of the background TSS as determined by a baseline study, whichever is the highest value.
- Preventative measures used to reduce suspension of particulate matter include:
    - Using the most appropriate dredger and the dredgers most suitable draghead to reduce particulate matter suspension
    - Shielding of the suction head
- Water sampling and analysis by an independent consultant has to be repeated as follows:
    - For less than 5,000 m^3 no water sampling required
    - Maintenance dredging: one water sample before and one water sample after dredging 10,000 m^3 dredged material, or part thereof.
- Water quality during dredging must be compared with baseline data and mitigation measures implemented if a deterioration in water quality, that is suspected to result from dredging activities, is discerned.

Mitigation:

- Mitigation measures used to prevent impacts resulting from suspended particulate matter include:
    - Slowing down the rate of dredging or ceasing dredging altogether when suspended solids reach a predetermined cut-off level (based on baseline results).
    - The use of silt curtains (not effective in strong currents)
- Coordinating dredging near sensitive receptors to coincide with tides, tidal currents and winds that will take plumes away from such receptors.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- The procedures followed to prevent environmental damage during service and maintenance, and compliance with these procedures, must be audited and corrections made where necessary.
- A report should be compiled of all dredging sampling and monitoring results.

2.1.18 Marine Impact

Toxic blasting material, particulate matter, waste water and dust entering the ocean and impacting on marine life.

Introduction of alien species through ballast water discharge. Benthic fauna will be displaced and destroyed. Birds may be disturbed by the activities however; this is perceived to be negligible. Marine mammals (especially seals) occur occasionally in the harbour, but not in numbers that will be cause severe impacts on the populations.

Dredging pose risks to marine life. Potential negative impacts of dredging include habitat destruction, smothering of benthic communities due to settling of suspended particulate matter, possible temporary displacement of animals (including birds) from the areas that are dredged, marine mammal strikes by the vessels or their propellers, and reduced water quality due to the suspension of particulate matter or through pollution.

Desired Outcome: To mitigate adverse effects to the surrounding marine environment as much as practically possible.

Actions:

Prevention / Mitigation:

- Due to the potential toxic nature of spray paint and dust created, its dispersion in the air should be mitigated as much as practically possible.
- Mesh netting to enclose the front and rear ends of the docks must be used at all times.
- Grit blasting and spray painting must be stopped when wind speeds are high enough to disperse spray paint and dust to nearby receptors (e.g. ocean).
- Alternative blasting techniques such as wet blasting or centrifugal shot blasting should be used in areas where dispersion of dust cannot be prevented.
- The World Health Organization - Hazard prevention and control in the work environment: Airborne dust (WHO, 1999) should be consulted.
- Follow procedures of International Maritime Organization (IMO): The International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention).
- On ship treatment of Ballast Water can also take place on ships already fitted with treatment plants, via two step treatment processes recommended in IMO guidelines and relevant published information on Ballast Water Treatment methods.
- It is advised that all guidelines in the IMO are followed strictly with regards to both Ballast Water Exchange and Ballast Water Treatment to ensure minimal introduction of invasive species.
- Clearly define the area to be dredged and monitor the dredging contractor’s adherence to dredging only this area in order to minimise the impact footprint.
- Limit dredging and disposal to within the boundaries of the areas defined by the Proponent.
- If any mortalities in marine fauna are observed at or around the dredging location, all dredging activities should be ceased and the cause investigated. Dredging can continue once it is determined to be safe to do so.

Responsible Body:

- Proponent
- Contractor

Data Sources and Monitoring:

- The Proponent must collect and keep a 1 kg sample of spent grit blasting material from each ship being blasted for future analysis if required.
- A surface water and sediment sampling regime must be undertaken quarterly to monitor the condition of the environment.
- A once-off water analysis regime must be performed to analyse pressure cleaning water collected in ballast tanks before such water is released into the ocean. This will determine whether this practice should be allowed to continue.
- All monitoring data must be included in a Bi-annual environmental monitoring report.

2.1.19 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. The development of the site is in line with the industrial character. During construction the site should be kept clean, tidy and maintained to ensure it remains aesthetically pleasing and does not add the urban decay.

During dredging, the aesthetic appeal of the area for tourists and locals may temporarily decrease. This is mostly linked to instances of suspension of particulate matter to such an extent that the water colour changes significantly, or a sheen or foam layer is created on the water that may spread and collect on the shore. This may impact on local tour operators operating sightseeing cruises in the bay.

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.
- Preventative and mitigation measures related to the prevention or minimisation of particulate matter suspension will successfully mitigate the impact.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

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

2.1.20 Cumulative Impact

These are impacts on the environment, which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of who undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. In relation to an activity, it means the impact of an activity that in itself may not be significant, may become significant when added to the existing and potential impacts resulting from similar or diverse activities or undertakings in the area.

Possible cumulative impacts associated with the operational phase include increase in noise and dust as a result of ship repair at the facility and other industrial properties nearby. The industrial activity and ship repair may also lead to a cumulative impact on the marine environment in terms of pollutants entering the water. The cumulative effect of lighting on birds due to industrial developments may 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:

- Review bi-annual summary reports based on all other impacts to gain an overall assessment of the impact of the operational phase.

2.2 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 Health and Safety Regulations of the Labour Act and 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.

2.3 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 EMP should be used as an on-site reference document throughout construction and operations of the facility. It must be read in conjunction with the Proponents internal Health, Safety, Security and Environmental Management System, and all operational personnel must be trained in its contents. Any party responsible for non-compliance with the EMP should be held accountable for implementing corrective measures, including environmental rehabilitation where required. All relevant construction and operational personnel must be taught the contents of these documents.

Monitoring requirements outlined in the EMP are critical for effective environmental performance management. Should monitoring results indicate deviations from acceptable limits, alternative methods or technologies must be considered and implemented to ensure that operations remain within regulatory and environmental thresholds.

Should the Directorate of Environmental Affairs (DEA) in the MEFT find that the impacts and related mitigation measures, which have been proposed in this report, are acceptable, the necessary authorisations and ECC may be granted to the Proponent. The ECC issued, based on this document, will render it a legally binding document which should be adhered to.

4 REFERENCES

Faul A, Botha P, Coetzer W. 2022. Update on the Environmental Impact Assessment for the Capital and Maintenance Dredging of Walvis Bay Harbour