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ENVIRONMENTAL MANAGEMENT PLAN

FOR

THE PROPOSED ACID STORAGE AND HANDLING FACILITIES FOR THE COOPERATIVE BULK HANDLING TERMINAL IN THE PORT OF WALVIS BAY

JANUARY 2025

Compiled for:
Compiled for:
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COOPERATIVE BULK HANDLING TERMINAL

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1 INTRODUCTION TO THE PROPOSED PROJECT

1.1 Background

The Cooperative Bulk Handling Terminal (Pty) Ltd (CBHT), a wholly owned subsidiary of Bannerman Investments Namibia (Pty) Ltd and part of the Bannerman Energy Ltd Group of Companies, was awarded an area within the port of Walvis Bay for its CBHT Facility. The CBHT is tasked with the logistical management of importing and exporting materials, including sulphuric acid, an essential reagent in the mining industry's extraction of uranium (U_3O_8). Sulphuric acid (H_2SO_4) (98%) is required Bannerman's Etango Mine.

CBHT has appointed A. Speiser Environmental Consultants (ASEC) to conduct an Environmental Impact Assessment (EIA) for the construction and operation of the sulphuric acid storage and handling facilities at the port and the transport of sulphuric acid to the Etango Mine. **Figure 1** and **2** show the area which was awarded to CBHT at the port of Walvis Bay and the transport route.

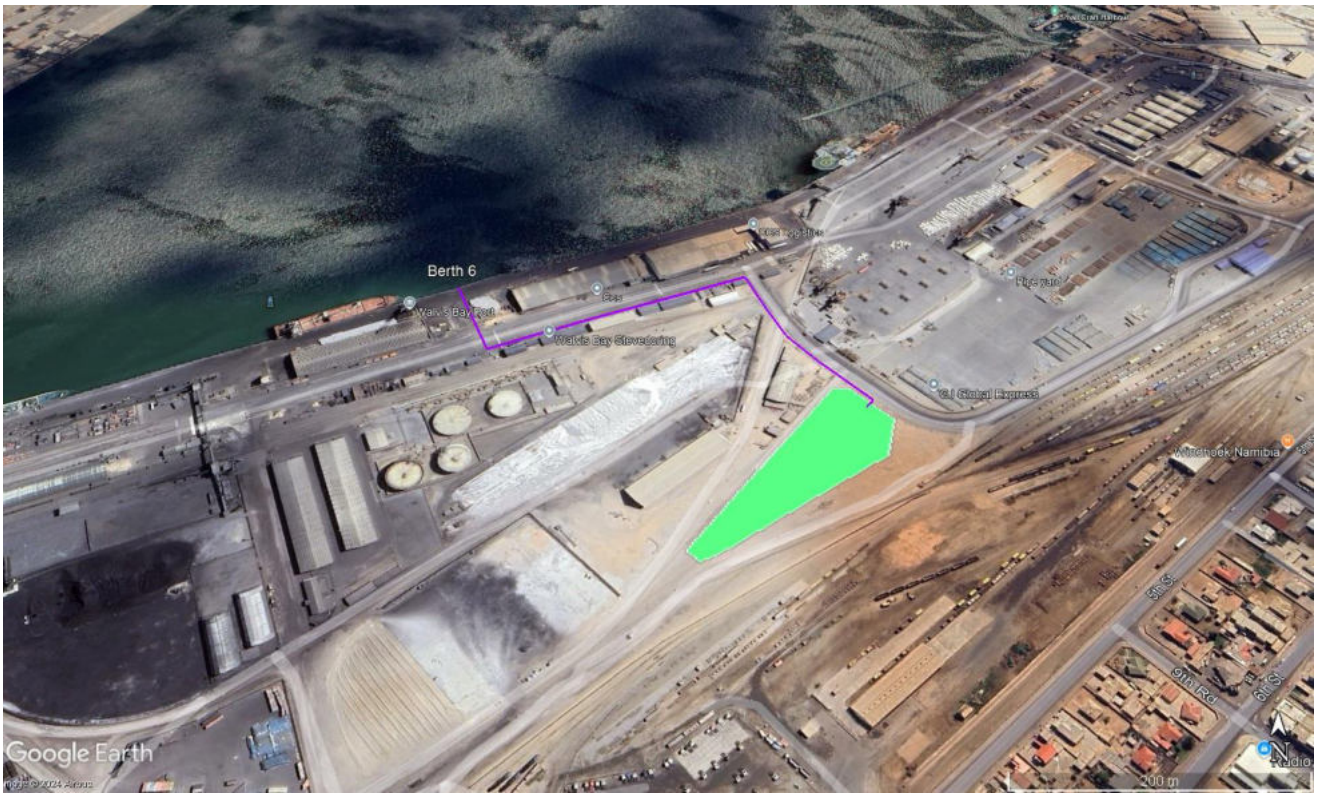

Figure 1: The proposed CBHT Acid Storage and Handling Facility (yellow) at the port of Walvis Bay and approximate pipeline servitude (blue) from the vessel offloading point to the CBHT Facility.

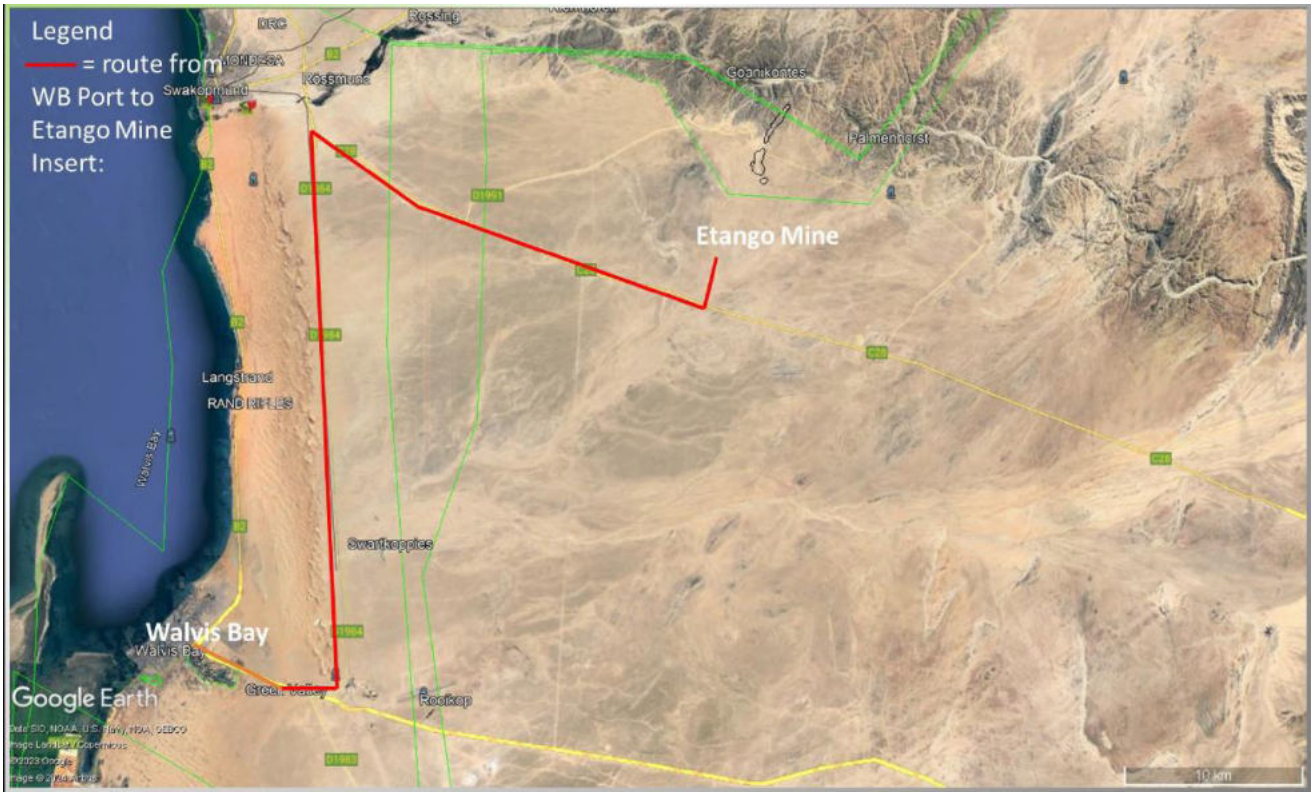

Figure 2: Road transport route from the sulphuric storage and handling facility the Port of Walvis Bay to the Etango Mine.

1.2 Proposed Activities and Infrastructure

The Etango Uranium Project is located on the Mining Licence 250 (ML 250) which was granted by the Ministry of Mines and Energy on 14 December 2023.

The Etango Mine's annual requirement of 98% sulphuric acid is in the order of 150,000 tonnes per annum (i.e. 430t/day for 350 days/year). This will amount to 14 road tankers daily from the CBHT Facility in the port of Walvis Bay to the Etango Mine. The sulphuric acid will either be sourced from a local Namibian supply or from abroad, either transported by rail within Namibia or shipped by vessels to the port and decanted into the storage tanks in the port. From there, it will be transported via road tankers to the mine.

The facilities to be provided in the port include the following:

- Storage capacity of 40,000 tonnes of 98% sulphuric acid in 4 tanks.
- Related infrastructure for the transfer of acid into the storage tanks from shipping vessels or rail acid tankers.
- Related infrastructure to transfer acid from the storage tanks to acid road tankers for transporting of the acid to the Etango Mine.
- Related infrastructure for safe operation of all facilities.

A detailed description of the associated infrastructure and activities can be found in **Section 7** of the EIA Scoping (including Impact Assessment) Report.

1.3 Potential Impacts during Construction

Environmental aspects and potential environmental impacts associated with the construction of the storage and loading facility and the associated infrastructure, e.g. pipelines, were identified and assessed in the EIA Scoping (including Impact Assessment) Report (see **Section 10** of the EIA report), these are summarized in **Table 1**.

Table 1: Environmental aspects and Potential impacts associated with the construction of the proposed CBHT Facility at the Port of Walvis Bay.

ACTIVITY / FACILITY RELATING TO CONSTRUCTION PHASE	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT
Remove historic waste and contaminated soil (hydrocarbons) from site	General and hazardous waste disposal	Contamination of soil, water and the sea. General degradation and nuisance impacts.
Use of construction vehicles and equipment.	Hydrocarbon leaks (from construction vehicles and equipment).	• Contamination of soil. • Contamination of groundwater. • Hydrocarbon spills washed into the harbour and impacting marine ecology
	Hydrocarbon spills (from handling of fuel and the onsite refueling of construction vehicles and equipment).	
	Noise	• Increased disturbance to third parties (sensitive receptors).
	Air quality	• Release of airborne emissions • Dust, resulting in potential health and nuisance impacts.
	Traffic	• Congestion
General construction activities	Hazardous spills and leaks (of substances such as adhesives, paint, etc.)	• Contamination of soil.
		• Contamination of groundwater
		• Contamination of surface water and run off into the harbour and impacting marine ecology.
	Construction activities (specifically relating to the pipelines) in close proximity to other port users' (existing infrastructure)	• Damage to existing infrastructure (i.e. Rössing pipeline, Walvis Bay Salt Holdings Conveyer system)
		• Interference with operational activities of other port users
Laydown of equipment and construction materials.	Surface water	• Blocking of water flows, the diversion of water and erosion.
General waste management.	General waste	• Contamination of soil, water and the sea. • General degradation and nuisance impacts.
	Hazardous waste	• Contamination of soil, water and the harbour, impacting marine ecology
Socio-economic conditions	Employment	• Job creation and skills development (positive impact)

All the above-mentioned environmental impacts have been screened out as significant issues and no further assessment was conducted.

However, mitigations and measures to avoid / minimise potential environmental impacts are listed in the EMP - Construction (see **Section 4**).

1.4 Potential Impacts during Operation

Environmental aspects and potential environmental impacts associated with the vessel offloading at Berth 6, the pipeline from Berth 6 to the CBHT Facility, the offloading from rail tankers and loading of road tankers at the new CBHT Facility and the transport to the Etango Mine were identified and assessed in the EIA Scoping (including assessment) Report (see **Section 10** of the EIA report), these are summarized in **Table 2**.

Table 2: Environmental aspects and Potential impacts associated with the operation at the proposed CBHT Facility at the Port of Walvis Bay and Transport to the Etango Mine.

ACTIVITIES	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT
1. Normal operations (no incidences)		
Offloading from vessels to the pipeline and to the CBHT facility	Minor spillages from the offloading procedure and potential failure of pipeline	Impact on the marine environment
		Impact on surface water and groundwater resources
		Impact on human health
Offloading of the sulphuric acid at the CBHT facility from rail tankers into storage tanks and loading of road tankers	Potential spillages of sulphuric acid during the loading and offloading operations at the CBHT Facility (The offloading activities at the Etango Mine is not included in this EIA, as it was part of the Etango Mine EIA)	Impact on the marine environment
		Impact on human health
		Impact on surface water and groundwater resources
Storage of sulphuric acid at the new CBHT Facility	Leaking of tanks	Impact on human health
		Impact on surface water and groundwater resources
	Air emissions and odour	Impact on human (i.e. 3rd parties) health
	Fire and explosion hazard	Impact on 3rd parties' safety
Washing of the tanker	Cleaning of the tanker during maintenance/inspection causing pillage	Impact on surface water and groundwater resources
Transport from the Facility to the Etango Mine	Spillages caused by road accidents	Impact on surface water and groundwater resources
		Impacts on biodiversity (terrestrial) getting in contact with sulphuric acid
		Impacts on soil
		3rd parties (road users)
	Additional traffic	Impact to 3rd parties (road users)
2. Incidences/Accidents (emergency situations)		
Offloading from vessels to the	Sulphuric acid spillage	Impact on the marine environment

ACTIVITIES	ASPECT	POTENTIAL ENVIRONMENTAL IMPACT
pipeline and to the facility		Impact on human health
Offloading of the sulphuric acid at the facility from rail tankers into storage tanks and loading of road tankers. Road tankers accidents on route to the Etango Mine.	Sulphuric acid spillage	Impact on surface water and groundwater resources
		Impact on human health from people getting into contact with the sulphuric acid
		Impact on biodiversity (terrestrial) getting into contact with the sulphuric acid
		Impact on soil

The above-mentioned aspects and impacts relate to spillages as a result of emergency situations, e.g. accidents or incidences from vessel offloading at Berth 6, the pipeline from Berth 6 to the CBHT Facility, the offloading from rail tankers and loading of road tankers at the new CBHT Facility and the transport to the Etango Mine. These must be avoided at all cost by the operators.

However, the design of all these areas already cater for the prevention of spills and associated impacts as far as possible, therefore potential impacts relate to spillages are associated with incidences and accidents.

The environmental aspects that were assessed in more detail in **Section 10** of the EIA report relate to marine and terrestrial environment, groundwater and surface water and 3rd parties health and safety.

The identified impacts with their significance rating (before and after mitigation) are summarized in **Table 3**.

Table 3: Summary of potential Impacts associated with the proposed Project.

Mitigation	Severity	Duration	Spatial Scale	Consequence	Probability of Occurrence	Significance
Impacts on marine environment						
Unmitigated	**M**	**L**	**M**	**L - M**	**L**	**L - M**
Mitigated	**L**	**L**	**M**	**L**	**L**	**L**
Impacts on tterrestrial biodiversity						
Unmitigated	**M**	**M**	**M**	**M**	**M**	**M**
Mitigated	**L**	**L**	**M**	**M**	**L**	**L**
Impacts on groundwater quality						
Unmitigated	**L**	**L**	**L**	**L**	**L**	**L**
Mitigated	**L**	**L**	**L**	**L**	**L**	**L**
Impacts on surface water quality						
Unmitigated	**M**	**M**	**L**	**M**	**L**	**L**
Mitigated	**L**	**M**	**L**	**L**	**L**	**L**
Impacts on third party health and safety						
Unmitigated	**H**	**H**	**M**	**H**	**M**	**H**
Mitigated	**M/L**	**M/L**	**M**	**M/L**	**L**	**L**

1.5 Potential hazards that could cause an accident leading to spillages

Table 4 provides a summary of potential hazards that can lead to possible sulphuric acid spillages in the port, at the Facility or during the transport to the Etango Mine.

Table 4: Potential hazards.

Activity	Hazard
Offloading from vessels to the pipeline	Human error
	Material failure of pipes due to poor maintenance
Pumping from the vessel to the Facility via pipelines	Material failure of pipes due to poor maintenance
Storing of the sulphuric acid in the tanks at the CBHT Facility	Material failure of tanks due to poor maintenance
	Poor design / material of tanks and bunding
Loading of road tankers	Human error
	Material failure due to poor maintenance
	Lack of spill containment
Transport to the Etango Mine	Human error
	Accidents caused by animals or other road users
	Weather conditions, i.e. Sand storms - sand covering the road, fog.

2 GENERAL MANAGEMENT REQUIREMENTS DURING CONSTRUCTION AND OPERATIONS

The following section list the general management requirements that are relevant to the construction and operation of the proposed CBHT Facility and transport to the Etango Mine.

CBHT is the owner of the sulphuric acid storage and handling facility and has overall responsibility for the safe operation of the facility and transportation until after it is pumped into the road tankers and leaves the Port. CBHT needs to adhere to the following requirements set out in the Port of Walvis Bay EMP (Geo Pollution Technologies, 2019) during all phases of planning, operations, construction/maintenance and possible decommissioning of the port -

- *"Ensure that all necessary permits from the various ministries, local authorities and any other bodies that govern the operations and construction activities of Namport and the port tenants are obtained and remain valid throughout project execution. These include permits from the Ministry of Mines and Energy for fuel handling and storage and effluent disposal permits from the Ministry of Agriculture, Water and Forestry.*
- *Ensure all appointed contractors, employees and tenants enter into an agreement which includes the need to adhere to the stipulations within the EMP. Ensure that the contents of the EMP are understood by the contractors, sub-contractors, employees, tenants and all personnel present or who will be present on site.*
- *Make provisions to have an environmental management division to implement the EMP and oversee occupational health and safety as well as general environmental related compliance.*
- *Have emergency plans, equipment and personnel on site, where applicable, to deal with all potential emergencies. Documents and planning related to this include:*
    - *EMP / risk management / mitigation / Emergency Response Plan and HSE Manuals;*
    - *Adequate protection and indemnity insurance cover for incidents;*
    - *Compliance with the provisions of all relevant safety standards;*
    - *Procedures, equipment and materials required for emergencies, inclusive of*

firefighting and oil spill contingency plans;

- *If one has not already been established, establish and maintain a fund for future ecological restoration of the project site should a spill occur or project activities cease and the site is decommissioned and environmental restoration or pollution remediation is required.*
- *Establish a reporting system to report on aspects of construction activities, operations and decommissioning as outlined in the EMP.*
- *Submit monitoring reports bi-annually, as per the requirements of the Department of Environmental Affairs, to ensure compliance and future environmental clearance certificate renewal.*
- *Regularly review and update the EMP and related documentation to include all new developments or projects where applicable.*
- *Appoint a specialist environmental consultant to update the EMP and apply for renewal of the environmental clearance certificate prior to expiry."*

Mitigation measures and requirements stated in the Port of Walvis Bay EMP (Geo Pollution Technologies, 2019) will be stated in the operation and construction EMP to additional ones identified by ASEC.

2.1 Parties responsible for the implementation of the EMP

This section describes the roles and responsibilities for implementing the various management plans (refer to Section 3 of the EMP).

2.1.1 CBHT - MANAGING DIRECTOR/ PROJECT PROPONENT

The Managing Director shall ensure compliance to this EMP. The EMP will be part of the contract with all contractors working on the project.

2.1.2 CBHT – CONSTRUCTION SUPERVISOR

The Construction Supervisor has overall responsibility for environmental management on the construction site for ensuring this EMP is implemented. To assist the Construction Supervisor, it is recommended to appoint an Environmental Officer (or dedicated person responsible for environmental management activities on site) who will be dedicated to managing and monitoring the environmental issues associated with the construction and operation activities of the proposed pipeline.

The Construction Supervisor must ensure the EMP is included in all contracts and to ensure that contractors adhere to the conditions of the EMP, the ECC and other relevant permits.

Contract documents should consider the inclusion of penalties for non-conformance to the EMP, or to link the sign off of the Contract to a retainer clause. The client retains part of the contract fees until the Construction Supervisor has signed off the rehabilitated sites, indicating satisfaction with the rehabilitation of the Contractor's work and laydown area.

The Construction Supervisor shall be responsible for responding to any actual environmental emergencies / incidences that occur within their sections, or as specified in this procedure.

The Construction Supervisor shall also ensure that sufficient financial and human resources are available at short notice to implement emergency procedures, and to take corrective action pro-actively when environmental risks are evident in advance.

2.1.3 CBHT - ENVIRONMENTAL OFFICER

The Environmental Officer will be responsible for assisting the Construction Supervisor in all environmental issues, and specifically to ensure that the commitments as set out in this EMP are implemented during the construction phase.

In addition to the above, the Environmental Officer is responsible for ensuring that all persons involved during the construction comply with this EMP.

The Environmental Officer will be responsible for the following aspects related to compliance of this EMP:

- Regular inspections and auditing compliance to this EMP and any other relevant legal requirements e.g. permits and authorisations.
- Conduct environmental awareness training during induction training and on an ad hoc basis thereafter.
- Conduct scheduled monitoring as outlined in various sections in the EMP as well as any additional monitoring required by permit and authorisations issued to the temporary water pipeline development by relevant authorities.
- Ensure compliance to this EMP and permits and authorisations issued to CBHT by relevant authorities. Ensure responsibilities and target dates are developed for each one of the commitments in this EMP.
- Submit required information to relevant authorities such as reporting related to monitoring and with regard to compliance with the EMP, permit and relevant authorisations.
- Liaise with the Construction Supervisor and Managing Director on environmental management (when and where required).

2.1.4 CONTRACTORS

All contractors and their sub-contractors and employees will be contractually required to comply with the relevant commitments in this EMP and NamPort EMP in the port.

2.1.4 Road Tanker Contractor(s)

The appointed road tanker contractor(s) will be responsible for the safe transport of the sulphuric acid to the Etango Mine. They will need to develop (or if not in place) emergency response plans, training and awareness of the plan to relevant stakeholders (i.e. emergency services, hospitals, etc.), assist with implementing the plan when required, co-ordinate emergency response along the route when required and overall logistics.

3 AUDITING REQUIREMENTS

The section below briefly discusses the monitoring and auditing requirements of the project.

3.1 Auditing Compliance of the EMP

The commitments contained in this EMP will, once an ECC has been obtained, be CBHT's contractual agreement with the Namibian authorities for sound environmental management. All employees, contractors and sub-contractors and any visitors to port will be expected to comply with the commitments contained herein and the NamPort Policies and EMP in the port.

3.1.1 INTERNAL AUDITS AND INSPECTIONS

The Environmental Officer will conduct internal management audits against the commitments in the EMP. These audits will be conducted every month. The audit findings will be documented for both record keeping purposes and for informing continual improvement.

The Environmental Officer will furthermore conduct daily inspections during construction.

3.1.2 EXTERNAL ENVIRONMENTAL PERFORMANCE ASSESSMENT

It is suggested that external performance assessments be conducted bi-annually and at the end of the construction phase by an independent qualified Environmental Practitioner.

3.2 Reporting / Submission of Information

As a minimum, the following documents will be submitted to the relevant authorities on an ongoing basis:

- The bi-annual environmental report required by the MEFT:DEA.

4 ENVIRONMENTAL MANAGEMENT PLAN – CONSTRUCTION

The measures proposed to manage and mitigate the potential impacts associated with the construction activities of the proposed new sulphuric acid storage and handling facility (and the associated infrastructure) are detailed in the action plans below.

4.1 Action plans to achieve objectives

Action plans to achieve the objectives and goals set out in the scoping report are listed in tabular format below. The action plans include the frequency for implementing the mitigation measures as well as identify the responsible party. Mitigation measures stated in the Port of Walvis Bay EMP (Geo Pollution Technologies, 2019) are included in the action plans.

4.1.1 ACTION PLAN: REMOVE HISTORIC WASTE AND CONTAMINATED SOIL (HYDROCARBONS) FROM SITE

Objective:

To ensure that the site has been cleaned of historic waste / contaminated soil, also the waste was not generated by CBHT, the handling and safe disposal thereof needs to be addressed by means of the contractual agreements between CBHT and NamPort.

Table 5: Remove historic waste and contaminated soil (hydrocarbons) from site.

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
Remove historic waste and contaminated soil (hydrocarbons) from site	General and hazardous waste disposal to ensure that no further contamination of soil, water and the sea can occur. General degradation and nuisance impacts.	• Plan the proper removal of historic waste and contaminated soil. • Ensure that all waste is disposed at an appropriate waste facility, especially when contaminated with hydrocarbons (ie. hazardous waste). • Further soil sampling should be conducted during geotechnical investigation to determine the depth of pollution. This should also be discussed with NamPort if it will be necessary to provide proof that the site has been cleaned correctly.	• Once off	• CBHT during site preparation

4.1.2 ACTION PLAN: USE OF CONSTRUCTION VEHICLES AND EQUIPMENT – HYDROCARBON (AND OTHER HAZARDOUS SUBSTANCE) MANAGEMENT

Objective:

To ensure that appropriate mitigation measures are in place to avoid and mitigate immediately any hydrocarbon spills. Restrict the laydown of construction materials and construction activities to a pre-approved area. The area used should be constrained as far as possible.

Table 6: Use of construction vehicles and equipment – hydrocarbon management.

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
Use of construction vehicles and equipment.	• Hydrocarbon leaks (from construction vehicles and equipment) might contaminate soil, surface water and potentially run off into the harbour. • Hydrocarbon spills (from handling of fuel and the onsite refuelling of construction vehicles and equipment) might contaminate soil, surface water and potentially run off into the harbour.	• Regular inspection and conduct maintenance of vehicles /machinery operating on site. • Appropriate measures to prevent leaks and spills of hazardous substances must be implemented. In case leaks and spills occur, it must be contained and clean-up promptly. • Educate workers on the use of containment and clean-up measures to contain and remediate pollution incidents because of leaks and spills of hydrocarbons, effluent or other forms of hazardous waste. • Once parked ensure trip trays are placed under the vehicles / machinery. <u>Port of Walvis Bay EMP:</u> • Any leaks detected must be repaired without delay and any maintenance that must occur within the port area must be performed on spill containment slabs or over drip trays. • Hazardous waste and contaminated water and soil must be disposed of at an appropriately classified facility or by approved contractors. Hazardous waste disposal certificates must be kept on file. • Emergency response plans and spill contingency plans must be in place and include all fuels, chemicals or hazardous substances being handled. In the case of tenants, copies of these documents must be submitted to Namport.	• Ongoing during construction	• CBHT and construction companies

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
		• Spill containment equipment such as booms and absorbents must be readily accessible. Training in the use of these are paramount. This is also important for any bunkering events within port limits.		

4.1.3 ACTION PLAN: USE OF CONSTRUCTION VEHICLES AND EQUIPMENT - NOISE

Objective:

To ensure that appropriate facilities are in place should fuel the site has been cleaned of historic waste / contaminated soil, also the waste was not generated by CBHT, the handling and safe disposal thereof needs to be addressed by means of the contractual agreements between CBHT and NamPort.

Table 7: Use of construction vehicles and equipment - Noise.

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
Use of construction vehicles and equipment.	Increased disturbance to third parties (sensitive receptors).	• Restrict construction activities to daylight hours. • Regularly maintenance of vehicles and equipment. • Construction equipment must be operated in such a way that noise is minimized, for example no unnecessary engine revving. • A complaints register should be kept for any noise-related issues and mitigation steps taken to address complaints where necessary. • Document and investigate all registered complaints and address the concerns about noise promptly. Document the actions taken. • Equipment and machinery in intermittent use must be shut down when not in use. Port of Walvis Bay EMP: • Follow Labour Act Regulations - Noise Regulations (Regulation 197), and / or WHO guidelines on maximum noise levels (Guidelines for Community Noise, 1999), to prevent hearing impairment for workers on site and a nuisance for nearby residential areas / neighbours. • Minimize or prevent noise producing activities and plan to restrict these to daytime as far as practically possible. Limit construction work to daylight hours. • All machinery must be regularly serviced to ensure minimal noise production. • The use of low frequency white noise or flashing lights should be considered instead of audible high	• Ongoing during construction	• CBHT and construction companies

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
		frequency warning signals for moving forklifts or trucks. • Placement of noise producing equipment, e.g. compressors, in such a way that noise is directed away from receptors and / or are attenuated.		

4.1.4 ACTION PLAN: USE OF CONSTRUCTION VEHICLES AND EQUIPMENT – AIR QUALITY

Objective:

To ensure that appropriate facilities are in place should fuel the site has been cleaned of historic waste / contaminated soil, also the waste was not generated by CBHT, the handling and safe disposal thereof needs to be addressed by means of the contractual agreements between CBHT and NamPort.

Table 8: Use of construction vehicles and equipment – Air Quality.

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
Use of construction vehicles and equipment.	• Release of airborne emissions. • Dust, resulting in potential health and nuisance impacts.	• Regularly maintenance of vehicles and equipment. • Stop earth moving activities during heavy wind situations. • Apply pragmatic management measures such as the visual monitoring of dust and disallowing employees to work in extreme wind conditions. Port of Walvis Bay EMP: • Implement dust suppression methods where applicable (e.g. wetting with water, covering loads, netting, etc.) Care should however be taken to limit the volume of water used for dust suppression. • Cut-off wind speeds should be provided for grit blasting and spray painting activities. Activities can continue after mitigation measures to reduce dust generation/transport have been implemented, or when wind speeds decrease. • A complaints register should be kept for any air quality related issues and mitigation steps taken to address complaints where necessary	• Ongoing during construction	• CBHT and construction companies

4.1.5 ACTION PLAN: GENERAL AND HAZARDOUSE WASTE MANAGEMENT

Objective:

To ensure that all waste (general and hazardous) waste is stored on site and disposed of correctly

Table 9: General Waste Management

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
General Waste Management	• Contamination of soil, water and the sea. • General degradation and nuisance impacts	• Collection and disposal of waste is carried out in a safe, responsible and legally-compliant manner, e.g. containers with lids are provided and labelled for each waste type. • Ensure waste re-use and recycling is optimised. Port of Walvis Bay EMP: • Waste reduction measures should be implemented and all waste that can be re-used / recycled must be kept separate. • Ensure adequate waste storage facilities (bins, drums and / or bags) are available and that these are clearly labelled to allow for segregation of wastes into different classes. • Education of personnel is paramount to create awareness for the proper handling and disposal of waste. • Ensure waste cannot be blown away by wind. • Prevent scavenging (human and non-human) at waste storage sites. • Waste in the port area, in the harbour water, and on the coastline within port limits must be regularly removed and disposed of. • No waste streams may be directed into the ocean without a disposal permit and then only under conditions imposed by the permit. • Liaise with the municipality or private contractors regarding handling of different waste streams.	• Ongoing during construction	• CBHT and construction companies

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
Hazardous waste management	• Contamination of soil, water and the harbour, impacting marine ecology	• Train all employees regarding waste disposal. • Ensure that appropriate waste storage containers are provided. • Regularly dispose of hazardous waste at the Walvis Bay Hazardous Waste Disposal Facility. <u>Port of Walvis Bay EMP:</u> • Contaminated bilge water, wash water, etc. should be treated as potentially hazardous waste that must be disposed of at appropriately classified facilities. • See the MSDS available from suppliers for disposal of contaminated products and empty containers. • 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) that are collected by authorised and licenced waste collection and handling contractors. • Waste water and sewage must be disposed of according to their relevant permit requirements.	• Ongoing during construction	• CBHT and construction companies

4.1.6 ACTION PLAN: USE OF CONSTRUCTION VEHICLES AND EQUIPMENT – TRAFFIC

Objective:

To ensure that no other port users are negatively impact on during construction activities.

Table 10: Use of construction vehicles and equipment – Traffic.

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
Use of construction vehicles and equipment.	• Congestion and blocking access to other port users.	• During construction, limit work to daylight hours. • Restrict all vehicle and equipment movements to approved routes. Routes should be clearly indicated (and demarcated where necessary), together with designated turning points and construction laydown areas. • All drivers must adhere to the speed limit of Namport, while travelling inside the port area. • Proper care must be taken at railway crossings. The correct signage and procedures must be put in place before operational activities commence. • Ensure implementation of a detailed safety code of conduct for transport contractors and monitor closely, with penalties enforced if necessary. • Develop and implement an Emergency Response Plan. This plan needs to be developed in conjunction with Namport's Emergency Response Plan. • Document and investigate all registered complaints and address the concerns promptly. <u>Port of Walvis Bay EMP:</u> • In cooperation with the local authority, erect clear signage regarding restricted areas and roads, access and exit points to the port, speed limits, traffic rules, rail level crossings, etc. • Trucks should not be allowed to obstruct any traffic or access points to any other businesses and facilities on the routes through Walvis Bay.	• Ongoing during construction	• CBHT and construction companies

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
		• If any extraordinary traffic impacts are expected, traffic management should be performed in conjunction with the local traffic department.		

4.1.7 ACTION PLAN: CONSTRUCTION ACTIVITIES (SPECIFICALLY RELATING TO THE PIPELINES) IN CLOSE PROXIMITY TO OTHER PORT USERS' (EXISTING INFRASTRUCTURE)

Objective:

To ensure that no existing infrastructures of any other port users are negatively impact on or damaged during construction activities.

Table 11: Construction activities (specifically relating to the pipelines) in close proximity to other port users' (existing infrastructure).

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
Construction activities (specifically relating to the pipelines) in close proximity to other port users' (existing infrastructure)	• Damage to existing infrastructure (i.e. Rössing pipeline, Walvis Bay Salt Holdings Conveyer system) • Interference with operational activities of other port users.	• Carefully plan all construction activities close to other port users and inform users of any short term closure of access areas. • Care must be taken not to damage any existing infrastructure, e.g. Roessing pipeline and also communication with the relevant tenants prior to work taking place close to their property. <u>Port of Walvis Bay EMP:</u> • Appointing qualified and reputable contractors is essential. • Properly documenting all construction activities undertaken in the port through 'as-built' drawings and associated documents. • The contractor must determine exactly where services amenities and pipelines are situated before construction / maintenance commences (utility clearance e.g. ground penetrating radar surveys). • Emergency procedures available on file.	• Ongoing during construction	• CBHT and construction companies

4.1.8 ACTION PLAN: SOCIO-ECONOMIC CONDITIONS - EMPLOYMENT

Objective:

To ensure that positive impacts from employment during construction activities are met.

Table 12: Socio-economic conditions - employment.

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
Employment	• Job creation and skills development (positive impact)	• Establish human resources policies for the recruitment of qualified, competent Namibians. • Maximize the use of the local labour force. • Establish procurement policies to support local, regional and Namibian supply of services and goods. • Support the local economy with staff residing in Walvis Bay and getting daily supplies from local businesses. • Support community initiatives of which staff are members of. Port of Walvis Bay EMP: • 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. • Local businesses and industries should be supported.	• Ongoing during construction	• CBHT and construction companies

5 ENVIRONMENTAL MANAGEMENT PLAN - OPERATION

The measures proposed to manage and mitigate the potential impacts are detailed in the action plans below.

5.1 Action plans to achieve objectives and goals

Action plans to achieve the objectives and goals set out in the scoping report are listed in tabular format below. The action plans include the frequency for implementing the mitigation measures as well as identify the responsible party. The assessment only focused on the specific commodity being transported (i.e. sulphuric acid) and specifically the impacts associated with possible spillage. Other aspects relating to the rail infrastructure itself did not form part of the scope of the assessment as it is an existing railway line, designed for this purpose (should sulphuric acid be sourced within Namibia). The Actions plans presented below therefore also relates only to potential sulphuric acid spillage.

(Acknowledgements: A number of the management and mitigation measures presented in the tables below were obtained from the Protea Chemicals Risk Register compiled on behalf of TransNamib in 2013 as well as the “EMP for the expansion of the importation, storage and transfer of bulk sulphuric acid for Rössing Mine” (CSIR, 2000)).

5.1.1 ACTION PLAN: OFFLOADING FROM VESSELS AND PUMPING TO THE CBHT FACILITY

Objective:

To ensure that the off-loading activities are conducted in such a way that spillage are prevented as far as possible. The pipelines to pump the sulphuric acid are placed in a culvert, that is in its entire length lined with a HDPE liner to prevent seepage into the harbour or soil contamination in case of an acid leak. However, should a spill occur, to minimize the potential impacts and to avoid the release of sulphuric acid into the marine environment.

Table 13: Offloading from the vessel and pumping to the CBHT Facility of the sulphuric acid.

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
Offloading from vessels and pumping via pipelines to the CBHT facility	Creating a 'bottle neck' in regard to offloading of vessels.	• Communicate with Roessing and NamPort the arrival of vessel.	• Ongoing during operations	• CBHT or appointed contractors during operation
	Spillage of sulphuric acid that could end up in the marine environment or impact soil in the port.	• Design the facilities to be as far as possible a zero-spillage system. • Develop an emergency response procedure and communicate with NamPort.	• Once off	• CBHT during final design
		• Implement as far as possible a zero-spillage operation • In the event of a spill, implement the relevant emergency response procedure to be developed. • All staff will receive training in spill response protocols. Should a spill occur, clean-up teams will be assembled immediately. Appropriate equipment to rapidly carry out the cleanup must be readily available at all times. • The pumping rate to the CBHT Facility must be controlled so not to exceed the design rate at any time and must be checked regularly during the acid transfer operations. • Maintenance of the offloading equipment and pipelines to be carried out on a regular basis. • Conduct regular audits of offloading activities. Port of Walvis Bay EMP:	• Ongoing during operations	• CBHT or appointed contractors during operation
			• Ongoing during operations	• CBHT or appointed contractors during operation

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
		No specific measures for sulphuric acid offloading are stated.		

5.1.2 ACTION PLAN: OFFLOADING AND LOADING ACTIVITIES AT CBHT FACILITIES

Objective:

To ensure that the loading and off-loading activities are conducted in such a way that spillage are prevented as far as possible. However, should a spill occur, to minimize the potential impacts and to avoid the release of sulphuric acid into soil. Note: the CBHT Facility is ± 300m from the harbour.

Table 14: Offloading and loading of the sulphuric acid at the CBHT Facility.

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
Offloading of the sulphuric acid at the CBHT facility from rail tankers into storage tanks and loading of road tankers	Spillage of sulphuric acid that could seep into adjacent soil.	• Design the facilities to be as far as possible a zero-spillage system.	• Once off	• CBHT during final design
		• Implement as far as possible a zero-spillage operation • In the event of a spill, implement the relevant emergency response procedure need to be developed. • All staff will receive training in spill response protocols. Should a spill occur, clean-up teams will be assembled immediately. Appropriate equipment to rapidly carry out the cleanup must be readily available at all times.	• Ongoing during operations	• CBHT or appointed contractors during operation
		• Rail tankers and sulphuric acid tanks to be emptied and the road tankers to be filled under constant supervision and control. • The pumping rate must be controlled so not to exceed the design rate at any time and must be checked regularly during the acid transfer operations. • The pump operator and the operator on the rail tanker or road tankers must be in direct communication with each other at all times.	• During acid transfer operations	• CBHT or appointed contractors during operation
		• Maintenance of the loading & off-loading equipment to be carried out on a regular basis.	• Ongoing during operations	
		• Conduct regular audits of loading and offloading activities.		
		• The following precautionary measure must be taken before the acid filled road tankers are leaving the CBHT Facility:	• Ongoing during operations	• CBHT or appointed contractors during operation

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
		✓ All filing domes on the road tankers must be inspected to determine whether they are properly closed and sealed; ✓ All road tankers must be checked to see that they are correctly labeled, clearly indicating that the tanker contains a hazardous substance; ✓ Every tanker must be weighed to ensure it is within the stipulated tonnage payload limit; ✓ The two-way radio communications are checked;		
		<u>Port of Walvis Bay EMP:</u> • Hazardous waste and contaminated water and soil must be disposed of at an appropriately classified facility or by approved contractors. Hazardous waste disposal certificates must be kept on file. • All hazardous substances, such as sulphuric acid and fuel, must be stored in a properly bunded area to prevent any spillages from entering the surrounding environment. • Emergency response plans and spill contingency plans must be in place and include all fuels, chemicals or hazardous substances being handled. In the case of tenants, copies of these documents must be submitted to Namport. • Spill containment equipment such as booms and absorbents must be readily accessible. Training in the use of these are paramount. This is also important for any bunkering events within port limits.	• Ongoing during operations	• CBHT or appointed contractors during operation

5.1.3 ACTION PLAN: STORAGE OF SULPHURIC ACID AT THE NEW CBHT FACILITY

Objective:

To ensure that the storage Facility is inspected for any material failure on a regular basis to ensure that no sulphuric acid leakage occurs. However, should a spill occur, to minimize the potential impacts and to avoid the release of sulphuric acid into soil. Note: the CBHT Facility is ± 300m away from the harbour.

Table 15: Storage of sulphuric acid at the new CBHT Facility.

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
Storage of sulphuric acid at the new CBHT Facility	Leakage from the tanks into adjacent soil.	• Design the facilities to be as far as possible a zero-spillage system. • Undertake detailed HAZOP study as part of the detailed design.	• Once off	• CBHT during final design
		• In the event of a spill, implement the relevant emergency response procedure need to be developed. • All staff will receive training in spill response protocols. Should a spill occur, clean-up teams will be assembled immediately. Appropriate equipment to rapidly carry out the cleanup must be readily available at all times.	• Ongoing during operations	• CBHT or appointed contractors during operation
		• Maintenance of the Facility on a regular basis. • Conduct regular audits.	• Ongoing during operations	• CBHT or appointed contractors during operation
		Port of Walvis Bay EMP: • All hazardous substances, such as sulphuric acid and fuel, must be stored in a properly bunded area to prevent any spillages from entering the surrounding environment.	• Ongoing during operations	• CBHT or appointed contractors during operation

5.1.4 ACTION PLAN: TRANSPORT FROM THE CBHT FACILITY TO THE ETANGO MINE

Objective:

To ensure that the spillage of sulphuric acid during the transportation between the CBHT Facility and the Etango Mine by road tankers is prevented at all cost. However, in the event of a spill ensure the impacts to 3rd parties, surface and ground water, soil and biodiversity are avoided or minimized as far as possible.

Table 16: Transport from the CBHT Facility to the Etango Mine.

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
Transporting the acid by road tanker	Accident due to road tanker failure, e.g. flat tyre.	• Ensure that road tankers are regularly serviced and inspected.	• Ongoing during operations	• Road tanker contractor(s)
	Accidents caused by third party, e.g. other road users or animals.	• Ongoing road safety training of road tanker drivers.	• Ongoing during operations	• Road tanker contractor(s)
Weather conditions during transport	Limit vision during fog condition.	• Check with the Etango Mine regarding heavy fog conditions. Road trips should be postponed until fog clears.	• Ongoing during operations	• Road tanker contractor(s)
General	Audits	• Draw up a formal process as per SANS 3000-1(is this the latest?) to conduct adequacy audits - indicating time frames and appropriate level of management involved • Draw up a formal process as per SANS 3000-1 to conduct compliance audits to cover all regulatory requirements including changes to legislation, codes of practice, rules and notices and directives.	• Prior to first load of acid being transported	• CBHT and Road tanker contractor(s)
	Hazchem identification	• All rail tankers to have Hazchem identification.	• Ongoing during operations	
	Radio communication	• Clear radio communications must be kept between Road tanker operator(s) and the Etango Mine on exact arrival times.		
	Precautionary measures	• The following precautionary measure must be taken during transportation: ✓ Road tanker drivers must strictly adhere to speed restrictions and adjust their speed according to the weather conditions, e.g. fog, sand storm;	• Ongoing during operations	• CBHT and Road tanker contractor(s)

4.1.5 ACTION PLAN: MAINTENANCE AND INSPECTIONS OF ROAD TANKERS

Objective:

To ensure that the road tankers are operated in such a way that sulphuric acid is not spilled and the general public is not exposed to the sulphuric acid during stops.

Table 17: Maintenance and inspection of road tankers.

Activities	Aspect / impact / issue	Management and mitigation measures	Action plan	
			Timing/ Frequency	Responsible parties
Washing and maintenance of tankers	Cleaning of the tanker during maintenance/inspection causing spillage	• The road tankers will only be cleaned on the inside should maintenance or inspections (from the inside) be required. The cleaning of the tankers will be conducted by the road tanker contractor. The cleaning of the empty tankers will be conducted as follows: ✓ Pump any final volume of sulphuric acid from the tank ✓ Wash the tank with preferred fresh water ✓ Test the tank inside for toxic or harmful/dangerous gasses ✓ Enter the tank from the top and end wall manholes ✓ Pump out any residual acid from the tanker using a small portable pump ✓ Wipe up and clean the inside of the tank with acid absorbing agents.	Scheduled maintenance	Road tanker contractor(s)

6 EMERGENCY RESPONSE PLANS

An Emergency Response Plan(s) needs to be developed for the offloading, storage, loading and transportation of the sulphuric acid. This Emergency Response Plan(s) must consists of the following components:

- An overarching Emergency Response Plan for the activities in the port and transportation route referring to the four detailed response plans as follows:
    1. Offloading activities of vessels and pumping of sulphuric acid to the CBHT Facility
    2. The CBHT storage Facility
    3. Loading of road tankers and offloading of rail tankers
    4. Transportation from the Port to the Etango Mine

Emergency Response Plans 1. to 3. need to be aligned with the existing Emergency Response Plans in the Port of Walvis Bay, e.g. Rössing Uranium. Rössing Uranium shared their existing Emergency Response Plans for their sulphuric acid storage and handling facility at the port of Walvis Bay with CBHT. CBHT will develop their own Emergency Response Plans aligned with the Rössing Uranium ones during the detailed design phase.

6.1 Training and Emergency drills

CBHT or the appointed operator shall ensure that training on the Emergency procedures, this EMP and Hazchem is provided to emergency teams, road tanker drivers, community and emergency services (municipalities) prior to the first load of acid being transported. The training needs to be repeated on a bi-annual basis.

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7 REFERENCES

CSIR, 2000. EMP for the expansion of the importation, storage and transfer of bulk sulphuric acid for Rössing Mine.

Geo-Pollution Technologies, 2019. Environmental Management Plan for the Operations of the Habour: Port of Walvis Bay.

Protea Chemicals Risk Register compiled on behalf of TransNamib in 2013