

APP-003557
OPERATIONS OF A BULK FUEL STORAGE FACILITY IN
WALVIS BAY
UPDATED ENVIRONMENTAL MANAGEMENT PLAN




Assessed by:



Assessed for:




March 2022

Project	UPDATED ENVIRONMENTAL MANAGEMENT PLAN FOR THE OPERATIONS OF A BAY BULK FUEL STORAGE FACILITY IN WALVIS BAY	
Report Version/Date	Final March 2022	
Prepared for	TotalEnergies Marketing Namibia (Pty) Ltd PO Box 4223 Windhoek Namibia	
Lead Consultant	Geo Pollution Technologies (Pty) Ltd PO Box 11073 Windhoek Namibia	TBL.: (+264-61) 257411 FAX.: (+264) 88626368
Main Project Team	André Faul (B.Sc. Zoology, Biochemistry); (B.Sc. (Hons) Zoology); (M.Sc. Conservation Ecology); (Ph.D. Medical Biosciences) Pierre Botha (B.Sc. Geology/Geography); (B.Sc. (Hons) Hydrology/Hydrogeology)	
Cite this document as	Faul A, Botha, P. 2022. Updated Environmental Management Plan for the Operations of a Bulk Fuel Storage Facility of TotalEnergies in Walvis Bay	
Copyright	Copyright on this document is reserved. No part of this document may be utilised without the written permission of Geo Pollution Technologies (Pty) Ltd.	
Report Approval	 André Faul	

I Marcel Thomas acting as the Proponent's representative (TotalEnergies Marketing Namibia) (Pty) Ltd, hereby confirm that we approve the Environmental Management Plan as presented in this document. All material information in the possession of the proponent that reasonably has or may have the potential of influencing the Environmental Management Plan was provided to the consultant.

Signed at Walvis Bay on the 4th day of March 2022.


 TotalEnergies Marketing Namibia (Pty) Ltd

CY/1977/4078
 Company Registration Number

Table of Contents

1	OBJECTIVES OF THE EMP	1
2	THE EMP	1
2.1	LAND USE, PLANNING, DESIGN, OPERATIONS – IDENTIFIED IMPACTS	1
2.2	LAND USE, PLANNING, DESIGN, OPERATIONS – MITIGATING MEASURES	2
3	THE IMPLEMENTATION OF THE EMP	2
4	CONCLUSIONS	17
5	REFERENCES	17

List of Tables

TABLE 1	PLANNING FOR OPERATIONS, MAINTENANCE AND FUTURE DECOMMISSIONING OF THE PROJECT	3
TABLE 2	THE OPERATIONAL PHASE	5
TABLE 3	MAINTENANCE AND DECOMMISSIONING PHASES	13

1 OBJECTIVES OF THE EMP

TotalEnergies Marketing Namibia (Pty) Ltd (the Proponent) requires an updated environmental management plan (EMP) for their existing Walvis Bay bulk fuel storage facility. The EMP provides management options to ensure potential impacts from operational activities are minimised. An EMP is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigation measures might be included if necessary. The EMP acts as a stand-alone document, which can be used during the operational phases as well as the decommissioning phases of any activity or development. All personnel taking part in the operations of this facility should be made aware of the contents of the EMP, so as to plan the relevant activities accordingly and in an environmentally sound manner.

The objectives of the EMP are:

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

The Proponent implements the International Standards of Operation (ISO) 14001 environmental management system (EMS) for its bulk fuel storage facilities' operations. An EMS is an internationally recognized and certified management system that 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 includes 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; and
- ◆ Periodic (internal and external) audits and reviews of environmental performance and the effectiveness of the EMS;
- ◆ An EMP.

2 THE EMP

The following general guidance for the EMP is based on the findings of the environmental impact assessment (EIA) carried out by Geo Pollution Technologies (Botha et al. 2014) and the updated EMP of 2018 (Faul & Botha 2018).

2.1 Land Use, Planning, Design, Operations – Identified Impacts

The following is the summary of the assessment of impacts:

- ◆ The property and surrounding properties are zoned for industrial use;
- ◆ The immediate neighbours constitute like industry;
- ◆ The risk of an accident/incident causing fires or explosions is possible. Human factors are still being considered and the best engineering still goes in to maintaining a very safe facility. If a fire or explosion was to occur, and the necessary engineered structures were not in place, there could be a significant impact on the adjoining properties.
- ◆ The risk of groundwater, surface water and soil contamination is possible.

2.2 Land Use, Planning, Design, Operations – Mitigating Measures

The following is a summary of the proposed EMP, which aims at reducing possible risk and enhancing positive impacts associated with the facility, taking into consideration all the risk perceptions raised by all stakeholders:

- ◆ To prevent product loss through ruptures of pipelines or hose during the offloading operations, all nozzles on rail tankers, road tankers and storage tanks are fitted with excess flow check valves. These are designed to allow only specific flow rates and the moment it exceeds this, the process is stopped. Small quantities lying in the hose that could leak would be captured by spill containment structures.
- ◆ Firefighting equipment and spill control / clean-up kits are present on site.
- ◆ The proposed facility would not cause any substantial ecological threat to the environment in the vicinity of Walvis Bay. Contamination of soils or groundwater is prevented through safe work practices, engineered safety devices and spill containment structures.

3 THE IMPLEMENTATION OF THE EMP

Table 1 to Table 3 outline the management of the environmental elements that may be affected by the different activities, grouped in each phase of development. These groups are as follows:

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

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

The EIA, EMP and Environmental Clearance Certificate must be communicated to the site manager. All monitoring results must be reported on bi-annually as indicated. These are important for any future renewals of the environmental clearance certificate and must be submitted to the Ministry of Environment, Forestry and Tourism.

Table 1 Planning for operations, maintenance and future decommissioning of the project

Activity	Objective	Action	Timing	Proof of Compliance	Responsible Body
Compliance	To comply with all legal requirements for the operations of the facility in Namibia.	<p>Apply for / renew the necessary permits from the various ministries, local authorities and any other bodies that govern the operations of the bulk fuel storage facility.</p> <p>Keep the environmental clearance certificate and petroleum products licence available on site.</p> <p>Finalise negotiations and resolve outstanding issues, if any, over the allocation of user rights and zoning of the property.</p>	Ongoing during operations and prior to possible future decommissioning	All contracts, permits, certificates and other legal documents on file.	Proponent
Appointments	To appoint reputable contractors and operational personnel and establish the EMP, a legal requirement that forms part of contracts with contractors and employees.	<p>Appoint contractors and employees and enter into agreements which include the EMP.</p> <p>Where applicable, ensure that the contents of the EMP are understood by the contractor, sub-contractors, employees and all personnel who will be present on site.</p>	Ongoing during operations and prior to possible future decommissioning	Contracts on file	Proponent
Management	Establish a management system to implement and monitor health, safety and environment.	<p>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.</p> <p>Allocate the responsibility of liaison officer to a dedicated staff member who will be responsible for dealing with complaints and communication with neighbours and other potentially impacted parties (when required).</p> <p>Have the following documentation, emergency plans, equipment and</p>	Ongoing during operations and prior to possible future decommissioning	<p>Documentation on file</p> <p>Personal Protection Equipment (PPE) on site</p> <p>Signage related to restricted areas, dangerous areas, and PPE requirements on site</p> <p>Emergency response material on site</p>	Proponent

Activity	Objective	Action	Timing	Proof of Compliance	Responsible Body
		<p>personnel in place to deal with all emergencies:</p> <ul style="list-style-type: none"> ● Environmental management plan, emergency response plan, HSE manuals, risk management, etc. ● Adequate protection and indemnity insurance cover for incidents ● All relevant safety standards ● Procedures, equipment and materials required for emergencies such as firefighting equipment, spill containment and clean-up, first aid, etc. 			
Restoration Fund/Insurance	Make provision for future environmental restoration or pollution remediation if ever required.	Ensure sufficient funding/insurance for future ecological restoration of the project site should project activities cease and the site is decommissioned and/or when environmental restoration or pollution remediation is required.	Ongoing during operations and prior to possible future decommissioning	Financial statements/proof of restoration fund/insurance	Proponent; Independent Specialist Consultant
Reporting	To establish a reporting system to report on monitoring aspects of operations, maintenance and decommissioning as outlined in the EMP.	Establish and / or maintain a reporting system to report on aspects of operations, maintenance and decommissioning as outlined in the EMP. Keep monitoring reports on file for bi-annual submission to allow for environmental clearance certificate renewal as required by the Ministry of Environment, Forestry and Tourism.	Ongoing during operations and prior to possible future decommissioning	Monitoring Reports	Proponent; Contractor
Environmental Clearance Renewal	To renew the environmental clearance certificate every three years.	Appoint a specialist environmental consultant to update the EIA and/or EMP and apply for renewal of the environmental clearance certificate.	Prior to expiry of environmental clearance certificate	Renewed environmental clearance certificate	Proponent; Independent Specialist Consultant

Table 2 The operational phase

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Employment	The facility provides employment to locals.	Training must be provided to local Namibians to ultimately employ a predominantly Namibian workforce. Deviations from this practice must be justified appropriately.	Bi-annual summary report based on employee records.	Proponent
Technological development and transfer of skills	To see an increase in skills of local Namibians, as well as development and technology advancements in the petroleum industry.	If the skills exist locally, employees and contractors must first be sourced from the town, then the region and then nationally. Deviations from this practice must be justified. Skills development and improvement programs to be made available as identified during performance assessments. Employees to be informed about parameters and requirements for references upon employment.	Proof of appointment of local Namibians on file.	Proponent
Demographic Profile and Community Health	In-migration and social ills related to unemployment. New and existing developments attract people who seek work. The trucking and distribution of fuel to and from Walvis Bay could contribute to the spread of HIV / AIDS.	Employ only local people from the area, deviations from this practice should be justified appropriately. Appointment of reputable contractors where applicable. Adhere to all local authority by-laws relating to environmental health which includes, but is not limited to, sanitation requirements for employees. Provide educational, awareness information for employees on various topics of social behaviour and HIV/AIDS. Disciplinary steps, within the legal parameters of Namibia, to be taken for socially deviant behaviour during working hours should be clearly stipulated in employment contracts.	Proof of appointment of local Namibians on file. Proof of training and educational programmes.	Proponent
Secure Fuel Supply	The operations of the facility aid in securing fuel supply to Namibia.	Ensure compliance to the petroleum regulations of Namibia. Proper fuel management to ensure constant supply. Record supply problems and take corrective actions.	Keep record of supply problems and corrective actions taken.	Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Traffic	<p>The site is located within an industrial area. Trucks must enter and leave the site for loading/off-loading.</p> <p>The distribution of fuel by truck from the depot will vary in intensity depending on demand in Namibia and the notices of fuel price increases. Limited parking for trucks exists on John Ovenstone Street. Tanker trucks that have to overnight do so on the premises and ablution facilities are provided. Traffic congestion resulting from trucks waiting to gain access to the facility may occur. This may be worsened in times of increased traffic to the neighbouring industries.</p>	<p>The placement of signs to warn and direct traffic will mitigate traffic impacts.</p> <p>If traffic congestion is experienced in John Ovenstone Street, the Proponent should liaise with those parties involved or impacted, including neighbours, to devise a workable solution to decrease traffic congestion.</p> <p>Fuel collection is normally during working hours. However, allowing extended fuel collection times after hours during peak times will also reduce congestion. Trucks should not be allowed outside the depot before one hour prior to the depot opening time and should leave within an hour after depot closing time.</p>	<p>A register of trucks arriving and leaving the premises must be kept.</p> <p>All incidents reported, complaints received, and action taken to be included in the bi-annual reports.</p>	Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Health, Safety & Security	<p>Health risks include:</p> <ul style="list-style-type: none"> ● Breathing in excessive fumes ● Slipping on wet surfaces ● Product contact with eyes and skin ● Carcinogenic effects of some petroleum products ● Accidents involving vehicles <p>Security risks are related to unauthorized entry, theft and sabotage.</p>	<p>It is imperative that adequate measures to ensure safety of staff and visitors on site are in place and implemented at all times.</p> <p>An integrated health and safety management system acts as a monitoring tool and mitigating tool. Typical mitigating measures within the health and safety management systems are:-</p> <ul style="list-style-type: none"> ● Operational and procedural manuals ● Health and safety training ● Housekeeping rules ● Colour coding areas, pipes, equipment and substances ● Signage for Personal Protective Equipment (e.g. protective clothing like safety boots and hard hats) ● Safe work procedures and permits to work ● Clearance certificates for confined spaces ● Emergency response plans ● Material Safety Data Sheets (MSDS) ● First aid treatment and training ● Medical procedures and emergency services ● Daily safety moments and/or drills <p>The MSDS give health related medical responses for personnel assisting staff who are exposed to the fuels.</p> <p>Implement covid-19 protocols in line with the national requirements inclusive of wearing of masks, sanitation and social distancing.</p> <p>Security procedures and proper security measures must be in place. Strict security that prevents unauthorised entry and security personnel should be utilised.</p>	<p>Any incidents must be recorded with action taken to prevent future occurrences.</p> <p>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.</p>	<p>Proponent</p>

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Noise	Noise pollution will exist due to trains and heavy motor vehicles accessing the site to offload fuel or refuel.	<p>The site is situated within an industrial area and it is important to refer and adhere to the World Health Organisation regulations pertaining to noise (Guidelines for Community Noise, 1999).</p> <p>All machinery must be regularly serviced to ensure minimal noise production.</p>	<p>Any complaints received regarding excessive noise should be recorded with notes on action taken.</p> <p>All incidents reported, complaints received, and action taken to be included in the bi-annual reports.</p>	Proponent
Fire Hazards	Products kept on site are highly flammable and therefore a fire and ore explosion risk exists.	<p>The following controls are typical measures for mitigating the threat of spillage of hazardous chemicals and possible fire outbreak:-</p> <ul style="list-style-type: none"> ● Storage according to Material Safety Data Sheet and SANS instructions ● Site inspection and maintenance ● Operational procedures and training ● Mechanical and electrical inspections ● Fire extinguishers ● Trained personnel ● Good housekeeping ● Reporting of leaks/spills <p>Fire Fighting and Fire Prevention:</p> <p>All fire precautions and fire control at the site must be in accordance with relevant SANS regulations or better. Firefighting measures as per the Material Safety Data Sheets of the products should be adhered to.</p> <p>In addition to this, all personnel have to be sensitised about responsible fire protection measures and good housekeeping such as the removal of flammable materials including rubbish and dry vegetation. Regular inspections should be carried out to check for these materials at the site. A holistic fire protection and prevention plan is needed. This plan must include an emergency response plan, firefighting plan and spill recovery plan.</p> <p>Experience has shown that the best chance to rapidly</p>	<p>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/serviced.</p>	Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
		<p>put out a major fire is in the first 5 minutes. It is important to recognise that a responsive fire prevention plan does not solely include the availability of firefighting equipment, but more importantly, it involves premeditated measures and activities to timeously prevent, curb and avoid conditions that may result in fires. An integrated fire prevention plan should be drafted. Special note must be taken of the regulations stipulated in sections 47 and 48 of the Petroleum Products and Energy Act, 1990 (Act No. 13 of 1990).</p>		
<p>Waste Production</p>	<p>Waste can be soil or water that become contaminated with fuel or domestic waste from bins, offices and ablution facilities. Contamination of fuel through accidental mixing of products results in waste.</p>	<p>See the MSDS for handling hazardous substances. Contaminated fuel products that can no longer be used in the market must be disposed of in the hazardous waste section of a municipal dump or where possible converted for beneficial use.</p> <p>All other domestic waste should be disposed of timeously to maintain visual orderliness, but more so to not give time for liquid waste to enter the soil substrate.</p> <p>Contaminated soils can be remediated in accordance with accepted procedures at a site dedicated for this purpose.</p> <p>The oil water separator should be cleaned regularly and waste disposed of at a suitably classified hazardous waste disposal facility. Surfactants (soap) may not be allowed to enter the oil water separator.</p> <p>Liaise with the municipality regarding waste and handling of hazardous waste.</p>	<p>A register of hazardous waste disposal should be kept. This should include type of waste, volume as well as disposal method/facility.</p> <p>Any complaints received regarding waste should be recorded with notes on action taken.</p> <p>All hazardous waste generated, incidents reported, complaints received, and action taken to be included in the bi-annual reports.</p>	<p>Proponent</p>

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Air Quality	Hydrocarbon vapours will normally be released during fuel delivery or loading due to incomplete containment of fuel and venting of the tanker's compartments. Air quality can also be affected when spills occur or hydrocarbon contaminated soils are present.	Vapour emissions of the kind mentioned are minimal. They are expected to be site specific and may pose a limited threat to personnel on site. All venting systems and procedures have to be designed according to SANS standards. Residual fuel in the pipe systems if leaked onto the ground will vaporise. Emissions disperse quickly downwind and the gas is heavier than air (See MSDS).	Testing of air at various points around the storage tanks, pipelines, immediate vicinity of the property and selected distances further away from outside of the property should be conducted every 6 months or sooner if an increase in released gasses is suspected. All data, complaints received, and action taken to be included in the bi-annual reports.	Proponent; Independent Specialist Consultant
Groundwater, Surface Water and Soil Contamination	Porous surface substrate can allow unwanted hazardous and ecologically detrimental substances to seep down to the water table.	The following measures must be employed to prevent spillage into surface water drainage channels and groundwater sources:- <ul style="list-style-type: none"> ● Spill control structures and procedures must be in place according to SANS standards or better and connection of all surfaces where fuel is handled with an oil water separator. ● All fuelling should be conducted on surfaces provided for this purpose. E.g. Concrete slabs with regularly maintained seals between slabs. ● The procedures followed to prevent environmental damage during service and maintenance, and compliance with these procedures, including the correct use of sumps and regular reporting of spillages must be audited and corrections made where necessary. ● Proper training of operators must be conducted on a regular basis. ● Contingencies for the changes in pressure and temperature between Walvis Bay and the interior of Namibia must be in place when filling of rail tankers takes place in Walvis Bay. Overfilling of the tanks in 	All spills or leakages to be included in the bi-annual reports. The report should contain the following information: <ul style="list-style-type: none"> ● date and duration of spill ● product spilled ● volume of spill ● remedial action taken ● comparison of pre-exposure baseline data (previous pollution conditions survey results) with post remediation data (e.g. soil hydrocarbon concentrations) ● copy of documentation in which spill was reported to the Ministry of Mines and Energy 	Proponent; Independent Specialist Consultant

Criteria	Nature	Mitigation	Monitoring	Responsible Body
		<p>Walvis Bay can cause product loss on route as release valves adjust the volume changes due to lower pressure and higher temperatures in Windhoek. Rail tankers arriving in the morning could release liquid fuel as temperatures rise. If these tankers are not positioned over bunded areas soil contamination will result.</p> <ul style="list-style-type: none"> ● Any spillage of more than 200 l must be reported to the relevant authorities and remediation instituted. ● Spill clean-up means must be available on site as per the relevant MSDS. ● Surfactants (soap) may not be allowed to enter the oil water separator as this will reduce or stop its effectiveness. 		
Ecological Impact	Being in an urban area this impact is mostly limited to pollution of the environment.	<p>Mitigation measures to prevent pollution as above to be implemented.</p> <p>The nesting of birds should be discouraged. Changes to buildings should take into account the habitats that can be created inadvertently by certain architectural or engineering designs.</p> <p>Staff should be informed of the value of biodiversity.</p> <p>Contact details of responsible organizations or people to contact, who can remove problem or injured animals, should be kept on site.</p>	<p>Any complaints received regarding waste, pollution or environmental damage should be recorded with notes on action taken.</p> <p>Any extraordinary animal sightings should be recorded and reported to the relevant authorities.</p> <p>A bi-annual report should be compiled of all incidents reported.</p>	Proponent
Visual Impact	This is an impact that not only affects the aesthetic appearance, but also the integrity of the site	Regular waste disposal and routine maintenance on infrastructure will ensure that the longevity of structures is maximised and a low visual impact is maintained. However, it is important that the real integrity of the structures is considered in the long term and not just appearances.	<p>A bi-annual report should be compiled of all complaints reported.</p>	Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
<p>Cumulative Impact</p>	<p>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.</p> <p>Possible cumulative impacts associated with the operational phase include: increased risk of groundwater and soil contamination; increased traffic in the area will have a cumulative impact on traffic flow on John Ovenstone Street and surroundings; increased risk of accidents.</p>	<p>Addressing each of the individual impacts as discussed and recommended in the EMP would reduce the cumulative impact.</p> <p>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.</p>	<p>Reviewing bi-annual summary reports based on all other impacts will give an overall assessment of the impact of the operational phase.</p>	<p>Proponent</p>

Table 3 Maintenance and decommissioning phases

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Waste Production	<p>When performing maintenance or upon decommissioning waste will be produced in the form of building rubble, obsolete equipment and structures, obsolete or residual products and equipment or structures that can be used elsewhere or sold as scrap.</p> <p>Soil polluted by hydrocarbons must be treated as hazardous waste.</p>	<p>To reduce the amount of waste all re-usable pipelines, pumps, tanks, valves and other equipment must be removed to another site owned by the proponent or sold.</p> <p>Those items that can not be used again must be scrapped in the appropriate manner. By law storage tanks may not be sold, but must be scrapped by approved recyclers.</p> <p>Upon maintenance or demolition of the buildings any waste, concrete and rubble must be removed from the property and taken to an approved dumpsite designated by the Municipality.</p> <p>Rehabilitation if necessary are to be done using funds designated for the purpose.</p>	<p>Regular visual inspection.</p> <p>A register of hazardous waste produced and disposal methods should be maintained.</p>	<p>Proponent; Contractor</p>
Ecological Impact	<p>Operations spanning many years may create new habitat for fauna and flora. Upon maintenance or decommissioning these habitats may be destroyed.</p>	<p>The proponent would have to ensure that no new habitat is created for flora and fauna. Before decommissioning the health, safety and environmental officer would need to inspect every structural facility to ensure that the dismantling and removal of any structure would not affect any organism that has become dependent on those structures for survival, shelter or breeding.</p> <p>Where new habitats were created, that is now occupied by fauna or flora, the proponent must contact the Ministry of Environment, Forestry and Tourism or other appropriate organizations to establish its conservation status.</p> <p>The possibility of relocating the fauna or flora must be investigated and executed. Should the species be listed as vulnerable to extinction, or worse, a meeting should be held with the Ministry of Environment, Forestry and Tourism in order to determine the appropriate handling of the situation.</p>	<p>A report should be compiled of any fauna and flora that established itself on the premises. The report should include all actions taken to relocate or deal with the situation.</p>	<p>Proponent; Contractor</p>
Employment	<p>Maintenance will require contractors. Decommissioning of the facility may</p>	<p>Restricted employment of local people and contractors only should be practiced. Deviations from this practice</p>	<p>Employment contracts on file.</p>	<p>Proponent</p>

Criteria	Nature	Mitigation	Monitoring	Responsible Body
	<p>lead to retrenchments or re-location of staff no longer required.</p>	<p>should be justified appropriately. Plan in advance for meeting the Labour Act's requirements for retrenching of staff if required. Where possible staff can be relocated to another facility or town where business continues in the same way.</p>	<p>Bi-annual reports compiled during normal operations of the facility must include the appropriate plans for handling of employees should the facility be decommissioned. The report should include budgeting for retrenchments and possible alternative positions elsewhere.</p>	
Dust	<p>Dust may be generated during maintenance and decommissioning phases and might be aggravated during periods of strong winds.</p>	<p>It is recommended that regular dust suppression be included in the maintenance and decommissioning phases, when dust becomes an issue. Personnel should be issued with dust masks for health and safety reasons.</p>	<p>Regular visual inspection. A complaints register must be maintained, in which any complaints from the community must be logged. Complaints must be investigated and, if appropriate, acted upon.</p>	<p>Proponent; Contractor</p>
Noise	<p>Noise pollution will exist due to heavy vehicles accessing the site during maintenance or to collect rubble from demolished building materials. Cranes may be erected for removing the huge storage tanks. Hammers, diggers and drills will be used.</p>	<p>The site is situated within a commercial area and it is important to refer and adhere to the World Health Organisation regulations pertaining to noise (Guidelines for Community Noise, 1999). All personnel must be issued with hearing protectors and neighbours must be notified of the time and duration of maintenance or decommissioning. Notice of the start of major maintenance activities or decommissioning should be given to the local authorities with an invitation to give feedback at any time with regards the noise impact.</p>	<p>A complaints register must be maintained, in which any complaints from the community must be logged. Complaints must be investigated and, if appropriate, acted upon.</p>	<p>Proponent; Contractor</p>
Visual Impact	<p>This is an impact that affects the aesthetic appearance</p>	<p>Visual impact could pose one of the most significant impacts. Visual impacts could be limited through keeping all maintenance and decommissioned areas clean and orderly at all times. Good housekeeping also reduces the risk of injuries. Notice of the start of the</p>	<p>A complaints register must be maintained, in which any complaints from the community must be logged. Complaints</p>	<p>Proponent; Contractor</p>

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Groundwater, Surface Water and Soil Contamination	Porous surface substrate can allow unwanted hazardous and ecologically detrimental substances to seep down to the water table.	<p>major maintenance activities or decommissioning should be given to the local authorities with an invitation to give feedback at any time with regards the visual impact.</p> <p>All precautions are to be taken to prevent contamination of the soil as this could enter the ecosystem. Leakages from vehicles might occur especially if they are serviced on site. Care must be taken to avoid contamination of soil and groundwater. Groundwater might spread pollutants to neighbouring receptors and may create an impact on underground utilities (i.e. fresh water supply to buildings, sewerage system). Pollutants in the soil and building rubble must be transported away from the site to an approved, appropriately classified waste disposal site.</p> <p>Confirm MSDS information for any remaining fuels, oils or lubricants that must be discarded.</p> <p>Regulations on sewerage discharge and the chemicals that may and may not be put into the sewerage system must be followed.</p>	<p>Report form for all spills or leaks is to be completed by Contractor and submitted to the Municipality environmental division and/or Ministry of Mines and Energy.</p> <p>A baseline study must be carried out after the decommissioning. This is to assess the condition of soil substrate and any groundwater present. Comparisons with previous conditions survey data is to be made and any discrepancies must be addressed before the site can be signed over.</p>	Proponent; Contractor
Health, Safety and Security	<p>During the maintenance and decommissioning phase similar risks to human beings as with the operational phase will be present.</p> <p>Once the tanks and pipelines have been emptied completely of their contents residual amounts of fuel might exist.</p> <p>All other risks associated with demolitions must be considered.</p>	<p>The maintenance and decommissioning of a bulk fuel storage facility can cause serious health and safety risks to workers on site. Occupational exposures are normally related to dermal contact with fuels and inhalation of fuel vapours during handling of such products. For this reason adequate measures must be brought in place to ensure safety of staff on site, and includes: (Provide forms for all end users who monitor)</p> <ul style="list-style-type: none"> ● Proper training of operators; ● First aid treatment; ● Medical assistance; ● Emergency treatment; ● Prevention of inhalation of fumes (fuel); 	<p>A register of all incidents must be maintained on a daily basis. This should include measures taken to ensure that such incidents do not repeat it self.</p>	Proponent; Contractor

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Fire and Explosion Hazard	Residual hydrocarbons could be present and might pose a risk to the teams doing maintenance or dismantling the various structures. Fire and/or explosion events are still possible.	<ul style="list-style-type: none"> ● Protective clothing, footwear, gloves and belts; safety goggles and shields; ● Manuals and training regarding the correct handling of materials and packages should be in place and updated as new or updated MSDS' become available; Risks might be lower but still exist especially if tanks must be entered for inspections. Confined Space Training will be required. ● 24-hour security surveillance in case of opportunistic activities. 	A register of all incidents must be maintained on a daily basis. This should include measures taken to ensure that such incidents do not repeat it self.	Proponent; Contractor
		<p>Various international occupational health and safety performances should be consulted for specific regulations regarding the decommissioning of the facility to ensure all risks are mitigated. All relevant regulations and precautions should be in place as it was during the Operational Phase. In addition to this, all personnel have to be sensitised about responsible fire protection measures and good housekeeping such as the removal of flammable materials including rubbish, dry vegetation, and hydrocarbon-soaked soil from the vicinity of the fuel storage facility. Regular inspections should still be carried out to inspect and test fire fighting equipment and pollution control materials at the fuel storage facility. All fire precautions and fire control at the fuel storage facility must be in accordance with SANS, or better. The holistic fire protection and prevention plan should still be utilised.</p> <p>Experience has shown that the best chance to rapidly put out a major fire is in the first 5 minutes. It is important to recognise that a responsive fire prevention plan does not solely include the availability of fire fighting equipment, but more importantly, it involves premeditated measures and activities to timeously prevent, curb and avoid conditions that may result in fires.</p>		

4 CONCLUSIONS

The above EMP, if properly implemented will help minimise adverse impacts on the environment. Where impacts occur, immediate action must be taken to reduce the escalation of effects associated with these impacts. To ensure the relevance of this document to the specific stage of project, it needs to be reviewed throughout all phases.

The EMP should be used as an on-site reference document during all phases of the proposed project, and auditing should take place in order to determine compliance with the EMP for the proposed site. Parties responsible for transgression of the EMP should be held responsible for any rehabilitation that may need to be undertaken.

Monitoring reports must be submitted to the Ministry of Environment, Forestry and Tourism on a bi-annual basis. This is a requirement by the ministry to allow for future renewal of the environmental clearance certificate.

5 REFERENCES

Botha P, Faul A, Hooks P; 2014 August; Environmental Impact Assessment for the Upgrade and Operations of the Total Namibia Bulk Storage Facility for Petroleum Products in Walvis Bay

Faul A, Botha, P. 2018. Updated Environmental Management Plan for the Operations of the Total Walvis Bay Bulk Fuel Storage Facility