

**WHOLESALE FACILITY FOR PETROLEUM PRODUCTS
RENTECH – WALVIS BAY
UPDATED ENVIRONMENTAL MANAGEMENT PLAN**




Assessed by:

Assessed for:

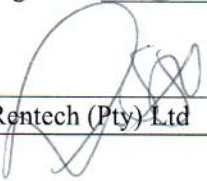


June 2020

Project:	UPDATED ENVIRONMENTAL MANAGEMENT PLAN FOR THE WHOLESALE FACILITY FOR PETROLEUM PRODUCTS, RENTECH – WALVIS BAY	
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Report Approval	 André Faul Conservation Ecology	

I Jean-Marie Du Plessis acting as the representative of Rentech (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 Walvisbay on the 25 day of June 2020.


 Rentech (Pty) Ltd

93/670
 Company Registration Number / ID

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1 OBJECTIVES OF THE EMP

Rentech (Pty) Ltd requested Geo Pollution Technologies (Pty) Ltd to update their existing environmental management plan (EMP) in order to renew their existing Environmental Clearance Certificate. The renewed environmental clearance certificate is required for operations and construction (care and maintenance) of their wholesale facility for petroleum products in Walvis Bay. The facility has been operational since 2007 and consisted of two aboveground storage tanks, with a combined storage capacity 106 m³. The two tanks were replaced with one 83 m³ aboveground storage tank and the bundwall refurbished in 2016. The replacement and refurbishment ensures compliance with South African National Standards (SANS 10089), as prescribed by Namibian law, stating that a bunded area should be able to contain 110% of the stored volume. EMP provides management options to ensure impacts of the facilities are minimised. An EMP is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigation measures might be included if necessary. The EMP acts as a stand-alone document, which can be used during the various phases (planning, construction, operational and decommissioning) of any proposed activity or development on a property. All personnel taking part in operations and construction activities of this facility, should be made aware of the contents of the EMP. This will allow parties involved to plan the relevant activities accordingly in an environmentally sound manner.

The objectives of the EMP are:

to include all components of the various activities;

- ◆ to prescribe the best practicable control methods to lessen the environmental impacts associated with all phases of the Facility;
- ◆ 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.

Rentech could implement an environmental management system (EMS). 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; and
- ◆ Periodic (internal and external) audits and reviews of environmental performance and the effectiveness of the EMS.

2 THE EMP

The following general guidance for the EMP is based on the findings of the initial EIA & Risk Assessment carried out by Geo Pollution Technologies (Botha et al. 2013).

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

The following is the summary of the identified impacts:

- ◆ The current zoning still designates the area as suitable for the continued operations of the fuel facility;
- ◆ The immediate neighbours constitute industry compatible with current ongoing operations;

- ◆ The risk of an accident/incident causing fires or explosions is considered to be high. Human factors must be considered and the best engineering applied to create / maintain of a safe facility. If a fire or explosion was to occur and the necessary engineered structures were not in place, there would be a significant possible impact on the adjoining commercial properties.

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

The following is a summary of the proposed Environmental Management Plan, which will aim at increasing the safety of the facility taking into consideration all the risks perceived by stakeholders:

- ◆ To prevent product loss through ruptures of pipeline or hose during the offloading operations, all nozzles on 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.
- ◆ Training of personnel and regular firefighting exercises should be carried out pertaining to the location and use of existing firefighting equipment and safety controls, like emergency shutdown switches, extinguishers etc. This would reduce the risk of fire and its spread to neighbouring properties.
- ◆ The fuel facility does 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. Installation of oil/water separators as specified by SANS would further decrease the risk associated with product spills.

3 THE IMPLEMENTATION OF THE EMP

The sections and tables below 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
- ◆ Construction (care and maintenance)
- ◆ Decommissioning Phase

All monitoring results must be reported on as indicated and submitted to the Ministry of Environment, Forestry and Tourism on a six monthly basis to allow for future ECC renewals.

3.1 Planning

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

- ◆ Ensure that all necessary permits from the various ministries, local authorities and any other bodies that governs all phases of the facility are in place and remains valid. This includes the petroleum products licence.
- ◆ Ensure all appointed contractors and employees enter into an agreement which includes the EMP. Ensure that the contents of the EMP are understood by the contractors, sub-contractors, employees and all personnel present or who will be present on site.
- ◆ Make provisions to have a Health, Safety and Environmental Coordinator to implement the EMP and oversee occupational health and safety as well as general environmental related compliance at the site.
- ◆ Have the following emergency plans, equipment and personnel on site where reasonable to deal with all potential emergencies:

- EMP / Risk management / mitigation / Emergency Response Plan and Health, Safety and Environmental (HSE) Manuals
 - Adequate protection and indemnity insurance to cover for incidents;
 - Comply with the provisions of all relevant safety standards;
 - Procedures, equipment and materials required for emergencies.
- ◆ If one has not already been established, establish and maintain a fund for future ecological restoration of the project site should project activities cease and the site is decommissioned and environmental restoration or pollution remediation is required.
 - ◆ Establish and / or maintain a six monthly reporting system to report on aspects of construction activities, operations and decommissioning as outlined in the EMP.
 - ◆ Submit six monthly reports to the Ministry of Environment, Forestry and Tourism to allow for environmental clearance certificate renewal after three years. This is a requirement by Ministry.
 - ◆ Appoint a specialist environmental consultant to update the EMP and apply for renewal of the environmental clearance certificate prior to expiry.

Table 1. The Operational Phase

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Skills, Technology and Development	During the operational phase training is provided to a portion of the workforce to be able to maintain and operate various features of a fuel facility according to the required standards. Skills are transferred to an unskilled workforce for general tasks. The technology required for the development of the facility is often new to the local industry, aiding in operational efficiency. Development of people and technology are key to economic development.	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. The proponent must employ Namibians where possible. Deviations from this practise should be justified appropriately.	Record should be kept of training provided. Ensure that all training is certified or managerial reference provided (proof to the employees) inclusive of training attendance, completion and implementation.	Proponent
Demographic and Community Health	The wholesale facility have been operational since 2007 and the scale of the project is small, thus no impact on the demographic profile in the area is expected. The trucking and distribution of fuel to the area could contribute to the spread of HIV / AIDS.	Restricted employment for residents from the area only should be practiced. Deviations from this practice should be justified appropriately. Training of local people should be considered from the start. These measures will reduce the influx of newcomers to the area and thereby reduce growth in the informal settlement and maintain property prices.	Facility inspection sheet for all areas which may present environmental health risks, kept on file. Report based on educational programmes and training conducted. Report and review of employee demographics.	Proponent
Employment	An increase of skilled and professional labour has and will continue to take place due to the operations of the facility.	The proponent must employ local Namibians where possible. If the skills exist locally, employees must first be sourced from the area or town. Deviations from this practice must be justified. All conditions and prescriptions of the Labour Act to be adhered to.	Summary report based on employee records.	Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Traffic	<p>The site is located on the corner of Theo Ben Gurirab Street and Circumferential Street in the Industrial Area of Walvis Bay. Traffic to the fuel facility will vary with fluctuations in fuel demand and possibly following announcements of fuel price increases.</p> <p>Vehicles fuelled are expected to mainly be trucks and large vehicles.</p>	<p>During periods of increased fuel demand such as prior to fuel price increases attendants must be on duty to prevent trucks waiting for refuelling and potentially causing traffic impacts.</p>	<p>Any complaints received regarding traffic issues should be recorded together with action taken to prevent impacts from repeating itself.</p> <p>A report should be compiled of all incidents reported, complaints received, and action taken.</p>	Proponent
Fire and Explosion Hazard	<p>Products kept on site are flammable and therefore a fire risk exists.</p>	<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"> ● A holistic fire protection and prevention plan is needed. This plan must include an emergency response plan, firefighting plan and spill recovery plan. ● 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). ● Maintain firefighting equipment, good housekeeping and personnel training (firefighting, fire prevention and responsible housekeeping practices). <p>Fire Fighting and Fire Prevention:</p> <ul style="list-style-type: none"> ● Ensure all chemicals are stored according to MSDS and SANS instructions. ● Maintain regular site, mechanical and electrical inspections and maintenance. ● Clean all spills / leaks. ● Special note must be taken of the regulations stipulated in sections 47 and 48 of the Petroleum Products and Energy Act, 1990 (Act No. 13 of 1990). ● Follow SANS standards for operation and maintenance of the facility. ● All dispensers must be equipped with devices that cut 	<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 themselves.</p> <p>A six monthly 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</p>	Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Health, Safety and Security	<p>During operational times all procedures for offloading, storage and dispensing of fuel presents risks to employees and clients. These risks are assessed in terms of the predicted impact if realised. Typical examples are:-</p> <ul style="list-style-type: none"> ● Breathing in excessive fumes ● Slipping on wet surfaces ● Product contact with eyes and skin ● Staff not wearing protective clothing ● Carcinogenic effects of some petroleum products 	<p>fuel supply during fires.</p> <ul style="list-style-type: none"> ● The proponent should liaise with the local Fire Brigade to ensure that all fire requirements are met. This includes, but is not limited to SANS 10400 T: 2011. <p>All health and safety standards specified in the Labour Act should be complied with.</p> <p>Implement and maintain an integrated health and safety management system, to act as a monitoring and mitigating tool, which includes:-</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>Implementation of maintenance register for all equipment and fuel/hazardous substance storage areas.</p> <p>The MSDS give health related medical responses for personnel assisting staff who are exposed to the fuels.</p>	<p>Any incidents must be recorded with action taken to prevent future occurrences.</p> <p>A six monthly 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>	Proponent
Noise	Noise pollution will exist due to vehicles accessing the site to offload fuel or refuel.	<p>Follow World Health Organization (WHO) guideline on maximum noise levels (Guidelines for Community Noise, 1999) to prevent hearing impairment.</p> <p>All machinery must be regularly serviced to ensure minimal noise production.</p>	<p>WHO Guidelines.</p> <p>Maintain a complaints register.</p> <p>Six monthly report on complaints and actions taken to address complaints and prevent future</p>	Proponent; Contractors

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Air Quality	Fuel vapours, however expected to be minimal, are released into the air during refuelling of bulk storage tanks as well as at filling points. Prolonged exposure may have carcinogenic effects. Dust may be generated should any construction take place	Personnel issued with appropriate masks where excessive vapours are present. Employees should be coached on the dangers of fuel vapours. Venting systems must be properly placed as per SANS requirements.	Any complaints received regarding excessive fuel vapours should be recorded with notes on action taken. All information and reporting to be included in a six monthly report	Proponent; Contractors
Waste Production	Waste is produced during normal operations. These can be soils that become contaminated with fuel, domestic waste from bins, offices and ablution facilities. Contamination of fuel through accidental mixing of products results in hazardous waste. Any contaminated material (soils, building rubble and empty chemical containers) should be treated as hazardous waste.	Waste reduction measures should be implemented and all waste that can be re-used / recycled must be kept separate. Ensure adequate disposal storage facilities are available that ensures waste cannot be blown away by wind and prevent scavenging (human and non-human) of waste storage. 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). Hazardous waste may not be mixed with other waste streams and should be disposed of as hazardous waste at an appropriately classified facility. See the MSDS available from suppliers for disposal of contaminated products and empty containers. The spill catchment traps and oil water separator should be cleaned regularly and waste disposed of appropriately. Surfactants (soap) may not be allowed to enter the oil water separator. Liaise with the municipality regarding waste disposal and handling of hazardous waste. Spilled hydrocarbons may not be washed off the forecourt area using surfactants like soap. Surfactants will cause the oil/water separator to malfunction leading to hydrocarbons	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. The oil water separator must be regularly inspected and all hydrocarbons removed once detected. Outflow water must comply with effluent quality standards. All information and reporting to be included in a six monthly report.	Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
<p>Groundwater, Surface Water and Soil Contamination</p>	<p>Porous surface substrate can allow unwanted hazardous and ecologically detrimental substances to seep down to the shallow water table.</p> <p>Surface runoff from the site is expected in a northerly direction. Runoff of pollutants from the site is not expected to reach any nearby surface water due to the design of the facility.</p> <p>Groundwater is not utilized in the area for human consumption but should be protected. Nearby geological structures may provide preferential pathways to sensitive groundwater sources and this should be prevented at all cost.</p> <p>Proper containment mechanisms installed should contain any release that might take place from spillages during operation of the facility.</p>	<p>entering the sewers.</p> <p>The following measures must be employed / maintained to prevent spillage into surface water drainage channels and groundwater sources:-</p> <ul style="list-style-type: none"> ● Spill control structures and procedures must be in place according to SANS standards or better. ● 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. ● Any spillage of more than 200 l must be reported to the Ministry of Mines and Energy and remediation instituted. ● Spill clean-up means must be available on site as per the relevant MSDS. 	<p>Inspection holes at the ends of the tanks must as a minimum be inspected every 14 days and evaluated if liquid is present.</p> <p>If large spills occurred or leaks are expected in reticulation or tanks, a pollution survey must be conducted to determine the extent of pollution.</p> <p>A six monthly report should be compiled of all spills or leakages reported. The report should contain the following information:</p> <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 with post remediation data (e.g. soil hydrocarbon concentrations) ● copy of documentation in which spill was reported to Ministry of Mines and Energy 	<p>Proponent; Independent Specialist Consultant</p>
<p>Ecological Impact</p>	<p>The effect of operational activities on the ecosystem functioning and biodiversity.</p>	<p>Report any extraordinary sightings to the Ministry of Environment, Forestry and Tourism.</p> <p>Mitigation measures related to waste handling and the</p>	<p>A record should be kept of any extraordinary fauna sightings or encounters on</p>	<p>Proponent</p>

Criteria	Nature	Mitigation	Monitoring	Responsible Body
		<p>prevention of groundwater, surface water and soil contamination should limit ecosystem and biodiversity impacts.</p> <p>Avoid scavenging of waste by fauna.</p> <p>The establishment of habitats and nesting sites at the facility should be avoided where possible.</p>	<p>All data to be compiled in a six monthly report.</p>	
Visual Impact	<p>This is an impact that affects the aesthetic appearance.</p>	<p>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.</p>	<p>A maintenance record should be kept.</p> <p>A six monthly report should be compiled of all complaints received and actions taken</p>	<p>Proponent</p>
Cumulative Impact	<p>Possible cumulative impacts associated with the operational phase include increase in traffic frequenting the site and along the sections of roads near the facility. An increase in emissions from these vehicles will decrease the air quality around the facility. Wear and tear on the roads and increased risks of road traffic incidences could increase. Additional traffic and operational noise would further increase noise impacts in the area.</p>	<p>Addressing each of the individual impacts as discussed and recommended in the EMP would reduce the cumulative impact.</p> <p>Reviewing biannual 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>Summary report based on all other impacts must be created to give an overall assessment of the impact of the Operational Phase.</p>	<p>Proponent</p>

Table 2. The Construction (care and maintenance) Phase

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Enhanced skills and technology transfer to the area and subsequent promotion of economic development	People need skills to perform their jobs. The technology to do something is often not found locally. Development of people and technology are key to economic development.	Contractors must be sourced locally and local businesses supported as far as is practically possible.	Proof of appointment of local contractors on file.	Proponent
Employment	Construction activities often requires the employment of contractors as well as employment and training of staff for the facility.	Employment and contractors should first be sourced locally, then regionally and then nationally. Deviations from this should be justified.	Proof of appointment of local contractors on file.	Contractor; Proponent
Traffic	The site is situated at the corner of Theo Ben Gurirab Street and Circumferential Street in the Industrial Area of Walvis Bay. Construction may have some impact on the movement of traffic onto the site when equipment and materials must be delivered.	When significant impacts on traffic is expected (e.g. during delivery of new storage tanks and materials), the contractor must liaise with the relevant traffic department to ensure that traffic flow along the affected route is minimally disrupted. The placement of signs to warn and direct traffic will mitigate traffic impacts.	Receive a weekly planning sheet from Contractor to know when traffic authorities and the general public need to be informed of possible obstructions. Any traffic related incidents and complaints received should be recorded in a report together with steps taken to mitigate the impacts.	Contractor; Proponent
Fire and Explosion Hazard	Construction activities near existing storage tank and fuel lines, as well as the removal thereof, which may contain residual fuel may pose risks of fire and explosion.	All equipment and tools must comply with standards which allow certain tools and equipment near flammable sources. Safety distances must be adhered to as well as safe work procedures. Safety talks and job hazard analysis to be done before work starts. Firefighting measures as per the MSDS of the product should be adhered to. In addition to this, all personnel have to be sensitised about responsible fire protection measures and good	Supervision of work is required and reports of safe and unsafe practice to be brought to the attention of the HSE manager. Any incidents reported must be recorded together with steps taken to mitigate the impacts. All information and reporting to	Contractor; Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
		<p>housekeeping such as the removal of flammable materials including rubbish, dry vegetation, and hydrocarbon-soaked soil from the vicinity of the construction. Regular inspections should be carried out to check for these materials at the site.</p> <p>All fuel storage and handling facilities in Namibia must comply with strict safety distances as prescribed by SANS. SANS is adopted by the Ministry of Mines and Energy as the national standard. If the setting-out of the site and the safety distances to the nearest adjacent property were adhered to, then any development can be safely built on the neighbouring property. It is specifically appropriate to comply with these standards, as Rentech has no control on the future placement of facilities around the facility.</p> <p>It must be assured that sufficient firefighting resources are available. A holistic fire protection and prevention plan is needed. This holistic plan must include an emergency response plan and firefighting plan. Regular surveys of the fire-fighting equipment and water supply should be carried out.</p> <p>Experience has shown that the best chance to rapidly put out a major fire is in the first five 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. An integrated fire prevention plan should be drafted before construction commence.</p>	<p>be included in a report.</p>	
Health, Safety and Security	<p>During construction activities, construction personnel will access the site. Excavation, earthmoving and transport equipment may be required. This increases the</p>	<p>The responsible contractor must ensure that all staff members are briefed about the potential risks of injuries on site.</p> <p>The contractor should be obliged to adhere to the</p>	<p>A register of all incidents must be maintained. This should include measures taken to ensure that such incidents do not repeat itself.</p>	<p>Contractor; Proponent</p>

Criteria	Nature	Mitigation	Monitoring	Responsible Body
	<p>possibility of injuries. A risk to site security and personnel health and safety exists during this period.</p>	<p>following:</p> <ul style="list-style-type: none"> ● All Health and Safety standards specified in the Labour Act; ● Selected personnel should be trained in first aid and a first aid kit must be available on site. ● Adequate emergency facilities and the contact details of all emergency services must be readily available; ● Provide all employees with required and adequate personal protective equipment (PPE). ● In consultation with the Walvis Bay Traffic Department prepare and submit a traffic management programme for sections of the roads to be closed or traffic diverted if necessary during the delivery of equipment; ● Equipment that are locked away on site must be placed in a way that does not encourage criminal activities; ● Induction training for contactors or staff operating on the site is required; and ● Security personnel to prevent unauthorised entry of the construction site. <p>Refer to the SANS document, MSDS and management system manuals.</p>	<p>First aid and firefighting training certificates on file.</p> <p>All information and reporting to be included in a report.</p>	
<p>Underground Utilities</p>	<p>If any excavations are required for construction activities, underground utilities like telecommunications, water supply and sewers are at risk of being damaged.</p> <p>These impacts may result in sections of Walvis Bay being left without amenities.</p>	<p>Appointing qualified and reputable contractors is essential. Proper training of construction personnel would reduce the possibility of the impact occurring.</p> <p>The contractor must determine exactly where amenities and pipelines are situated before construction commences (utility clearance e.g. ground penetrating radar surveys). Liaison with the Municipality and suppliers of services is essential.</p> <p>Emergency procedures and contact details of emergency response teams for dealing with the</p>	<p>Maps and location information of existing underground amenities on file.</p> <p>A register of all incidents must be maintained. This should include measures taken to ensure that such incidents do not repeat itself.</p> <p>All information and reporting to be included in a report.</p>	<p>Contractor; Proponent</p>

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Noise	Noise pollution may exist if heavy vehicles is required for construction activities. Audible warning noises from equipment. Compaction, cement mixing, drilling and excavating may be required, this will further contribute to noise pollution.	possible consequences of this impact must be in place before construction commence. Follow World Health Organization (WHO) guidelines on maximum noise levels (Guidelines for Community Noise, 1999) to prevent hearing impairment. Construction workers to be issued with hearing protection where needed.	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. All information and reporting to be included in a report.	Contractor; Proponent
Waste Production	The ability of products and building rubble to act as a waste which must be cleaned up or removed off-site. Construction activities at the facility may produce waste in the form of domestic waste, building rubble or any other waste as a result of spillage or leakage from cleaning and painting materials. Any soil / waste contaminated hydrocarbons that may be encountered during the construction phase should be treated as hazardous waste.	Waste reduction measures should be implemented and all waste that can be re-used / recycled must be kept separate. Ensure adequate disposal storage facilities are available that ensures waste cannot be blown away by wind and prevent scavenging (human and non-human) of waste storage. Waste should be disposed of regularly and at appropriately classified disposal facilities, this includes hazardous material (empty chemical containers, and other contaminated material such as contaminated rugs, paper water and soil). Hazardous waste may not be mixed with other waste streams and should be disposed of as hazardous waste at an appropriately classified facility. See the MSDS available from suppliers for disposal of contaminated products and empty containers. The spill catchment traps and oil water separator should be cleaned regularly and waste disposed of appropriately. Surfactants (soap) may not be allowed to enter the oil water separator Liaise with the municipality regarding waste disposal	Regular visual inspection. A register of hazardous waste produced and disposal methods should be maintained. All information and reporting to be included in a report.	Contractor; Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Groundwater, Surface Water and Soil Contamination	<p>Porous surface substrate can allow unwanted hazardous and ecologically detrimental substances to seep down to the water table either at the site of spill or after being washed away by surface flow.</p> <p>Leakages from existing tank and pipelines and construction vehicles, accidental spills of fuel, paints and other chemicals might occur. Groundwater might spread pollutants to neighbouring receptors and may create an impact on underground infrastructure.</p>	<p>and handling of hazardous waste.</p> <p>Spilled hydrocarbons may not be washed off the forecourt area using surfactants like soap. Surfactants will cause the oil/water separator to malfunction leading to hydrocarbons entering the sewers.</p> <p>All precautions are to be taken to prevent contamination of the soil as this could enter the ecosystem.</p> <p>Appointing qualified and reputable contractors is essential. Proper training of construction personnel would reduce the possibility of the impact occurring.</p> <p>Any spill of fuel of 200l or more must be reported to the Ministry of Mines and Energy and remediation action taken.</p> <p>Polluted soil and building rubble must be transported away from the site to an approved, appropriately classified waste disposal site. Polluted soil can be remediated.</p> <p>Confirm MSDS information for any fuels, oils, lubricants or chemicals that must be discarded.</p>	<p>A soil pollution baseline study must be carried out before construction on the sites commence. If pollution is present a clean-up and remediation plan must be established. The baseline will allow assessment and comparison of the condition of soil substrate during operational and after decommissioning phases.</p> <p>Report form for all spills or leaks during construction is to be completed by Contractor and submitted to the HSE department.</p> <p>All information and reporting to be included in a report.</p>	<p>Contractor; Independent Consultant Proponent; Specialist</p>
Cumulative Impact	<p>Possible cumulative impacts associated with the operational phase include increased traffic in the area. This will have a cumulative impact on traffic flow on surrounding streets.</p>	<p>Addressing each of the individual impacts as discussed and recommended in the EMP would reduce the cumulative impact.</p> <p>Reviewing biannual 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>Six monthly reports based on all impacts will give an overall assessment of the impact of the construction phase.</p>	

3.2 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. Any pollution present on the site must be remediated. The impacts associated with this phase include noise and waste production as structures are dismantled. Noise must be kept within WHO standards and waste should be contained and disposed of at an appropriately classified and approved waste facility and not dumped in the surrounding areas. Future land use after decommissioning should be assessed prior to decommissioning and rehabilitation initiated if the land would not be used for future purposes. The EMP for the facility will have to be reviewed at the time of decommissioning to cater for changes made to the site and implement guidelines and mitigation measures.

4 CONCLUSIONS

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

The EMP should continue to be used as an on-site reference document during all phases of the 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 every six months to allow for the future renewal of the Environmental Clearance Certificate.

5 REFERENCES

Botha P, Faul A, Hooks P; 2013 August; Environmental Impact Assessment for the Wholesale Facility for Petroleum Products Rentech – Walvis Bay