

APP-002990

**KARAS OASIS PETROLEUM TRADING CC FUEL RETAIL FACILITY AND
TRUCK PORT IN KARASBURG**

UPDATED ENVIRONMENTAL MANAGEMENT PLAN




Assessed by:



Assessed for:


**Karas Oasis Petroleum
Trading CC**

September 2021

Project:	UPDATED ENVIRONMENTAL MANAGEMENT PLAN FOR THE KARAS OASIS PETROLEUM TRADING CC FUEL RETAIL FACILITY AND TRUCK PORT IN KARASBURG
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Report Approval	 André Faul Conservation Ecology

I BRADLEY D. BASSON acting as the representative of Karas Oasis Petroleum Trading CC, 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 Windhoek on the 20th day of September 2021.


Karas Oasis Petroleum Trading CC

CC/2016/06490
Company Registration Number / ID

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1 OBJECTIVES OF THE EMP

Karas Oasis Petroleum Trading CC (the Proponent) 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 completion of construction (including future care and maintenance) and operations of their fuel retail facility in Karasburg. The facility is located on a consolidation of Portion A of the Farm Kalkfontein Townlands No. 48 and Erf 1 Karasburg, now registered as erf 560, Main Street, Karasburg. Construction of the facility has already commenced and is anticipated to be completed by December 2021.

The EMP provides management options to ensure impacts from both the construction and 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 both the construction, and operational phases as well as the decommissioning phases of any proposed activity or development. All personnel taking part in the operations 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 both construction and operations 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 operational personnel.

Karas Oasis Petroleum Trading CC could implement the International Standards of Operation (ISO) 14001 Environmental Management System (EMS) for its operations. An EMS is an internationally recognized and certified management system that will ensure ongoing incorporation of environmental constraints. At the heart of an EMS is the concept of continual improvement of environmental performance with resulting increases in operational efficiency, financial savings and reduction in environmental, health and safety risks. An effective 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.

2 THE EMP

The following general guidance for the EMP is based on the findings of the initial EIA and risk assessment carried out by Geo Pollution Technologies (Faul et al., 2018)

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

The following is the summary of the assessment of impacts:

- ◆ The surrounding properties are zoned for commercial and light industrial use;
- ◆ 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 industrial 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 Management Plan, which will reducing risk and mitigating / preventing possible impact 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 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 Karasburg. 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 4 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
- ◆ Construction (including care, maintenance and upgrades) Phase
- ◆ Operational Phase
- ◆ Decommissioning Phase

The EMP is a living document that must be prepared in detail, and regularly updated, by the proponent as the project progress and evolve. The tables below act as a guideline for the EMP to be established by Karas Oasis Petroleum Trading. 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.

All monitoring results must be reported on 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 on a bi-annual basis. This is a requirement by the Ministry.

Table 1. Planning for Construction, Operations and Future Decommissioning of the Project

Activity	Objective	Action	Timing	Proof of Compliance	Responsible Body
Compliance	To continue to comply with all legal requirements for the construction and operations of the facility in Namibia.	Ensure the necessary permits from the various ministries, local authorities and any other bodies that governs the construction and operations of the proposed activity remains valid. Finalise negotiations and resolve any outstanding issues, if any, over the allocation of user rights and zoning of the property on which the proposed activity will be located.	Ongoing during construction and operations	All contracts, permits, certificates and other legal documents on file.	Proponent
Baseline	Determine baseline pollution conditions prior to any new development with pollution risk.	Collect samples where required and analyse for chemicals of concern.	Prior to commencement of construction	Analysis results on file	Independent Specialist Consultant
Appointments	To appoint reputable contractors and operational personnel and establish the EMP, a legal requirement that forms part of the contract with the contractor and employees.	Appoint a contractor and employees and enter into an agreement which includes the EMP. Ensure that the contents of the EMP are understood by the contractor, sub-contractors, employees and all personnel who will be present on site.	Ongoing during construction and operations	Contracts on file	Proponent; Contractor
Management	Establish a management system to implement and monitor Health, Safety and Environment.	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, procedures, equipment and personnel in place to deal with all emergencies: ● Risk Management / Mitigation / Environmental Management Plan/	Ongoing during construction and operations	Documentation on file Personal Protection Equipment (PPE) on site Signage related to restricted areas, dangerous areas, and PPE requirements on site Emergency response material on site	Proponent; Contractor

Activity	Objective	Action	Timing	Proof of Compliance	Responsible Body
		<p>Emergency Response Plan and HSE Manuals</p> <ul style="list-style-type: none"> ● Adequate protection and indemnity insurance cover for incidents; ● Comply with the provisions of all relevant safety standards; ● Procedures, equipment and materials required for emergencies. 			
Restoration Fund/Insurance	To establish a fund/insurance for future environmental restoration or pollution remediation if ever required.	To establish 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.	Ongoing during construction and operations	Financial statements of restoration fund/insurance	Proponent; Independent Specialist Consultant
Reporting	To establish a reporting system to report on monitoring aspects of construction, operation and decommissioning as outlined in the EMP.	Establish a reporting system to report on aspects of construction, operation and decommissioning as outlined in the EMP. Submit bi-annual monitoring reports to MEFT in compliance with the conditions stipulated in the ECC.	Ongoing during construction and operations	Bi-annual 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 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 Construction Phase

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Skills, Technology & Development	<p>Training will be provided to employees in order to perform various functions for successful implementation and execution of the project. Skills will be transferred to an unskilled workforce for general tasks. New technologies are often investigated and introduced into the industry. Development of people and technology are key to economic development.</p>	<p>If the skills exist locally, contractors must first be sourced from the area, then the region and then nationally. Deviations from this practice must be justified.</p> <p>Training and skills development must be focussed on Namibians.</p> <p>Skills development and improvement programs to be made available as identified during performance assessments.</p> <p>Employees to be informed about parameters and requirements for references upon employment.</p>	<p>Record should be kept of training provided.</p> <p>Ensure that all training is certified or managerial reference provided (proof provided to the employees) inclusive of training attendance, completion and implementation.</p> <p>Bi-annual report based on records kept.</p>	Proponent
Demographic Profile and Community Health	<p>The project relies on labour. It is not foreseen that the project will create a change in the demographic profile of the local community, as employment will be sourced locally as far as possible. The community may still to some extent be exposed to factors such as communicable disease (e.g. HIV/AIDS) and alcoholism/drug abuse. This impacts on overall community health. Should an increase in foreign people (e.g. migrant workers) in the area take place, this may potentially increase the risk of criminal and socially / culturally deviant behaviour.</p>	<p>Employ only local people from the area, deviations from this practice should be justified appropriately.</p> <p>Adhere to all municipal by-laws relating to environmental health, such as sanitation requirements.</p> <p>Educational programmes for employees on HIV/AIDS and general upliftment of employees' social status.</p> <p>Appointment of reputable contractors.</p>	<p>Bi-annual summary report based on employee demographics, educational programmes and training conducted.</p>	Proponent
Revenue Generation and Employment	<p>An increase in semi-skilled, skilled and professional labour result from construction and maintenance activities. Increased economic resilience will realise</p>	<p>The Proponent must employ local Namibians where possible. Deviations from this must be justified.</p> <p>If the skills exist locally, employees must first be sourced from the town, then the region and then</p>	<p>Bi-annual summary report based on employee records.</p>	Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Traffic	<p>Construction activities are expected to have some impact on the movement of traffic to the site when construction material and equipment must be transported to the site.</p>	<p>Diversion of traffic may not be required, although possible cranes and flatbed truck vehicles are to frequent the site when installing the fuel tanks.</p> <p>When significant impacts on traffic is expected (e.g. during delivery of storage tanks materials), the contractor must liaise with the relevant traffic department to ensure that traffic flow along the affected route is minimally disrupted.</p> <p>The placement of signs to warn and direct traffic will mitigate 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 bi-annual report should be compiled of all incidents reported, complaints received, and action taken.</p>	Contractor; Proponent
Fire	<p>Construction activities near flammable materials may result in fires that may spread to nearby receptors.</p>	<p>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.</p> <p>Firefighting measures as per the Material Safety Data Sheets of the product 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, 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</p>	<p>A report should be compiled bi-annually of all incidents reported. The report should contain dates when fire drills were conducted and when fire equipment was tested.</p>	Contractor; Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
		<p>Mitigation</p> <p>these standards, as the Karasburg Town Council 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 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. An integrated fire prevention plan should be drafted before construction commences.</p>		
Health, Safety and Security	<p>During the construction phase, construction personnel will access the site. Different excavation, earthmoving and transport equipment will be onsite. This increases the possibility of injuries. A risk to site security and personnel health and safety exists during this period.</p>	<p>All health and safety standards specified in the Labour Act and other applicable legislation should be complied with.</p> <p>All staff members must be briefed about potential health risks and injuries on site.</p> <p>All staff involved in construction must at all times wear personal protective equipment (PPE).</p> <p>Safe working conditions must be provided when working at heights or in confined spaces.</p> <p>Selected personnel should be trained in first aid.</p> <p>The contact details of all emergency services must be readily available.</p> <p>Access to the site should always be strictly controlled.</p>	<p>Any health, safety and security related incidents must be recorded with action taken to prevent future occurrences.</p> <p>A report should be compiled bi-annually of all incidents reported. The report should also contain dates when training were conducted and when safety equipment and structures were inspected and maintained.</p>	Contractor; Proponent
Existing Infrastructure	<p>Due to excavations, underground utilities like telecommunications,</p>	<p>Appointing qualified and reputable contractors is essential. Proper training of construction personnel</p>	<p>Maps and location information of existing underground amenities on</p>	Contractor; Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
and Underground Utilities	<p>water supply and sewers are at risk of being damaged.</p> <p>These impacts may result in sections of Karasburg being left without amenities.</p>	<p>would reduce the possibility of the impact occurring.</p> <p>The contractor must determine exactly where amenities and pipelines are situated before construction commence (utility clearance e.g. ground penetrating radar surveys). Liaison with the Town Council and suppliers of services is essential.</p> <p>Emergency procedures and contact details of emergency response teams for dealing with the possible consequences of this impact must be in place before construction commence.</p>	<p>file.</p> <p>A register of all incidents must be maintained and all information and reporting to be included in a bi-annual report.</p>	
Dust	<p>Dust may be generated during demolition and construction if it involves the exposure of soil before new concrete surfaces are laid and due to increased traffic to and from the site for deliveries and removals. This might be aggravated during periods of strong winds which occurs regularly in Namibia during the winter months.</p>	<p>It is recommended that regular dust suppression be included during construction, when dust becomes an issue.</p> <p>Personnel are to be issued with dust masks for health reasons when needed.</p>	<p>Regular visual inspection.</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>All information and reporting to be included in a bi-annual report.</p>	Contractor; Proponent
Noise	<p>Noise pollution will exist due to heavy vehicles accessing the site with building materials, as well as the audible warning noises from trucks and heavy equipment. Compaction, cement mixing, drilling and excavating will be some additional noise producing activities.</p>	<p>The site is situated within a mixed residential and commercial 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>Construction workers to be issued with hearing protection where needed.</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>All information and reporting to be included in a bi-annual report.</p>	Contractor; Proponent
Waste Production	<p>The construction at the facility will produce waste in the form of domestic waste, building rubble or any other waste as a result of spillage or leakage from cleaning</p>	<p>Due to the nature of some hazardous materials they should be disposed of in an appropriate way at an appropriately classified waste disposal facility. See the MSDS available from suppliers if the user is not sure how to dispose of the substance.</p>	<p>Regular visual inspection.</p> <p>A register of hazardous waste produced and disposal methods should be maintained.</p>	Contractor; Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
	<p>and painting materials.</p> <p>Any soil polluted by hydrocarbons that may be encountered during the construction phase should be treated as hazardous waste.</p>	<p>Liaise with the Town Council regarding waste and appropriate handling of hazardous waste.</p> <p>Temporary waste disposal facilities should be present on site. This should include separate containers for products that can be re-used or recycled.</p> <p>Removal of waste should be at regular (weekly) intervals to maintain visual orderliness, but more so to not give time for liquid waste to enter the soil substrate. Dry waste is at risk of increasing the dust / litter impact so should be removed regularly.</p>	<p>All information and reporting to be included in a bi-annual report.</p>	
Ecological	<p>Being in an urban area this impact is mostly limited to pollution of the environment.</p>	<p>Mitigation as suggested for waste handling and pollution control should prevent further ecological impacts.</p> <p>Any extraordinary animal sightings on site must be reported to the Ministry of Environment, Forestry and Tourism.</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>Any extraordinary animal sightings must be recorded and reported on.</p> <p>All information and reporting to be included in a bi-annual report.</p>	Contractor; Proponent
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 construction vehicles, accidental spills of fuel, paints and other chemicals might occur. Groundwater might spread pollutants to neighbouring</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 200 l 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</p>	<p>A soil, and if possible groundwater, pollution baseline study must be carried out before construction on the sites commence. This will allow assessment of the condition of soil substrate (i.e. pollution) during operational and after decommissioning phases.</p> <p>Report form for all spills or leaks during construction is to be completed by Contractor</p>	Contractor; Independent Consultant Proponent; Specialist

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Heritage Impact	<p>receptors and may create an impact on underground infrastructure.</p> <p>Sites with archaeologically or culturally important significance might be uncovered during excavations. These can include graves, stone walls or cultural artefacts.</p>	<p>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>If such a site is found during the construction phase the construction process must be halted and the relevant authorities must be informed. Construction may only continue at that location once permission has been given. Firstly, the Namibian Police must be informed. Secondly, the National Monuments Council dealing with heritage should be informed.</p>	<p>and submitted to the HSE department.</p> <p>All information and reporting to be included in a bi-annual report.</p> <p>Record of any discoveries and proof of notifications to authorities on file.</p> <p>All information and reporting to be included in a bi-annual report.</p>	<p>Contractor; Proponent</p>
Visual Impact	<p>This is an impact that affects the aesthetic appearance, especially during construction of the site.</p>	<p>It is important that all construction waste materials are removed from site and that the construction areas are kept neat. This will also play a role in ensuring health and safety onsite as well.</p>	<p>A bi-annual report should be compiled of all complaints reported.</p>	<p>Contractor; Proponent</p>
Cumulative Impact	<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</p>	<p>All other preventative measures for the different impacts will help prevent this impact.</p>	<p>Bi-annual reports based on all other impacts will give an overall assessment of the impact of the construction phase.</p>	<p>Contractor; Proponent</p>

Criteria	Nature	Mitigation	Monitoring	Responsible Body
	<p>area.</p> <p>Possible cumulative impacts associated with the construction phase include increase in traffic frequenting the site. Therefore an increase in emissions from these vehicles will decrease the air quality around the site. Wear and tear on the roads and increased risks of road traffic incidences could increase. Additional traffic and construction noise would further increase noise impacts in the area.</p>			

Table 3. The Operational Phase

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Skills, technology and development	Training will be provided to employees in order to perform various functions for successful implementation and execution of the project. Skills will be transferred to an unskilled workforce for general tasks. New technologies are often investigated and introduced into the industry, thus aiding in operational efficiency. Development of people and technology are key to economic development.	If the skills exist locally, employees must first be sourced from the area, then the region and then nationally. Deviations from this practice must be justified. Training and skills development must be focussed on Namibians. 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.	Record should be kept of training provided. Ensure that all training is certified or managerial reference provided (proof provided to the employees) inclusive of training attendance, completion and implementation. Bi-annual report based on records kept.	Proponent
HIV/AIDS, In-migration and Informal Settlements	The project relies on labour. It is not foreseen that the project will create a change in the demographic profile of the local community, as employment will be sourced locally as far as possible. The community may still to some extent be exposed to factors such as communicable disease (e.g. HIV/AIDS) and alcoholism/drug abuse. This impacts on overall community health. Should an increase in foreign people (e.g. migrant workers) in the area take place, this may potentially increase the risk of criminal and socially / culturally deviant behaviour.	Employ only local people from the area, deviations from this practice should be justified appropriately. Adhere to all municipal by-laws relating to environmental health, such as sanitation requirements. Educational programmes for employees on HIV/AIDS and general upliftment of employees' social status.	Bi-annual summary report based on employee demographics, educational programmes and training conducted.	Proponent
Revenue Generation & Employment	The facility provides employment to locals.	The Proponent must employ local Namibians where possible. Deviations from this must be justified.	Bi-annual summary report based on employee records.	Proponent
Security in Fuel Supply	The operations of the facility will aid in securing fuel supply to the residents of Karasburg, visitors and the transport	If the skills exist locally, employees must first be sourced from the town, then the region and then nationally. Proper record keeping of fuel volumes and supply and demand statistics will ensure uninterrupted supply of fuel to	Fuel sales and reconciliation statistics on file	Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Traffic	<p>industry</p> <p>Traffic impacts during periods of fuel delivery and high traffic volumes to the facility.</p>	<p>patrons.</p> <p>Tanker trucks delivering fuel and vehicles visiting to refuel should not be allowed to obstruct any traffic in Trunk Road (B3).</p> <p>If any traffic impacts is expected traffic management should be performed to prevent these.</p> <p>The placement of signs to warn and direct traffic will mitigate traffic impacts.</p>	<p>Any complaints received regarding traffic issues should be recorded.</p> <p>A report should be compiled bi-annually of all incidents reported and complaints received.</p>	Proponent
Health, Safety & Security	<p>Activities associated with the operational phase are reliant on human labour and therefore will expose them to health and safety risks. Handling of hazardous chemicals (inhalation and carcinogenic effect of some petroleum products), will pose the main risks to employees. Security risks will be related to unauthorized entry, theft and sabotage.</p>	<p>Clearly label dangerous and restricted areas as well as dangerous equipment and products.</p> <p>Equipment that will be locked away on site must be placed in a way that does not encourage criminal activities (e.g. theft).</p> <p>Provide all employees with required and adequate personal protective equipment (PPE).</p> <p>Ensure that all personnel receive adequate training on operation of equipment / handling of hazardous substances.</p> <p>All health and safety standards specified in the Labour Act should be complied with.</p> <p>Implementation of maintenance register for all equipment and fuel / hazardous substance storage areas.</p> <p>Selected personnel should be trained in first aid and a first aid kit must be available on site. The contact details of all emergency services must be readily available.</p> <p>Implement and maintain an integrated health and safety management system, to act as a monitoring and mitigating tool, which includes: colour coding of pipes, operational, safe work and medical procedures, permits to work, emergency response plans, housekeeping rules, MSDS's and signage requirements (PPE, flammable etc.).</p> <p>Security procedures and proper security measures must be</p>	<p>Any incidents must be recorded with action taken to prevent future occurrences.</p> <p>A report should be compiled bi-annually 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

Criteria	Nature	Mitigation	Monitoring	Responsible Body
		<p>in place to protect workers and clients, especially during cash in transit activities.</p> <p>Reduce the amount of cash kept on site to reduce the risk of robberies.</p> <p>Strict security that prevents unauthorised entry during construction phases.</p>		
Noise	Noise pollution will exist due to heavy vehicles accessing the site to offload fuel or refuel.	The site is situated within a mixed residential and commercial area and it is important to refer and adhere to the World Health Organisation regulations pertaining to noise (Guidelines for Community Noise, 1999).	<p>Any complaints received regarding excessive noise should be recorded with notes on action taken.</p> <p>All complaints and additional data, if available, to be compiled in a bi-annual report.</p>	Proponent; Independent Specialist Consultant
Fire Hazards	Operational activities may increase the risk of the occurrence of fires. Fuel, especially unleaded petrol, is highly flammable and therefore presents a fire and explosion risk.	<p>Ensure all chemicals are stored according to MSDS and SANS instructions.</p> <p>Maintain regular site, mechanical and electrical inspections and maintenance.</p> <p>Clean all spills / leaks immediately.</p> <p>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>Follow SANS standards for operation and maintenance of the facility.</p> <p>All dispensers must be equipped with devices that cut fuel supply during fires.</p> <p>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>Maintain firefighting equipment and promote good housekeeping.</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.</p>	Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Waste Production	<p>Waste is produced during the operational phase. Waste may include hazardous waste associated with the handling of hydrocarbon products. Contaminated soil and water is considered as hazardous waste. Domestic waste will be generated by the facility and related operations. Waste presents a contamination risk and when not removed regularly may become a fire hazard.</p>	<p>Personnel training (in e.g. firefighting, fire prevention and responsible housekeeping practices).</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 regularly 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 spill catchment traps and oil water separator should be cleaned regularly and waste disposed of at a suitably classified hazardous waste disposal facility.</p> <p>Surfactants (soap) may not be allowed to enter the oil water separator.</p> <p>Liaise with the local authority 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 data to be compiled in a bi-annual report.</p>	Proponent
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.</p>	<p>The following measures must be employed 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 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. 	<p>A report should be compiled bi-annually 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) 	Proponent; Independent Specialist Consultant

Criteria	Nature	Mitigation	Monitoring	Responsible Body
		<p>Mitigation</p> <ul style="list-style-type: none"> • 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. • Surfactants (soap) may not be allowed to enter the oil water separator as this will reduce or stop its effectiveness. 	<p>Monitoring</p> <ul style="list-style-type: none"> • copy of documentation in which spill was reported to Ministry of Mines and Energy 	
Ecological Impact	Being in an urban area this impact is mostly limited to pollution of the environment.	Mitigation measures to prevent pollution to be implemented.	<p>Any complaints received regarding waste, pollution or environmental damage should be recorded with notes on action taken.</p> <p>A report should be compiled bi-annually of all complaints reported.</p>	Proponent
Visual Impact	This is an impact that not only affects the aesthetic appearance, but also the integrity of the facility. Bright lighting used at night may negatively impact nearby residents.	<p>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> <p>Minimize the amount of lighting used at night and direct lighting towards working surfaces.</p>	A report should be compiled bi-annually of all complaints reported.	Proponent
Cumulative Impact	These are impacts on the environment, which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of who undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a	<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>	Bi-annual reports based on all other impacts will give an overall assessment of the impact of the operational phase.	Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
	<p>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 which can lead to the pollution of surrounding water sources. Increased traffic in the area will have a cumulative impact on traffic flow on the Trunk Road (B3).</p>			

Table 4. Decommissioning Phase

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Waste Production	<p>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 demolition of the buildings and concrete the rubble must be removed from the property and taken to an approved dumpsite designated by the Karasburg Town Council.</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 waste produced and disposal methods should be maintained.</p>	Proponent; Contractor
Ecological Impact	<p>Operations spanning many years may create new habitat for fauna and flora.</p> <p>Upon decommissioning these habitats will be destroyed.</p>	<p>The proponent would have to ensure that no new habitat is created for flora and fauna. Before decommissioning the HSE 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 MEFT or other appropriate organizations to establish the conservation status of it.</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 MEFT 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>	Proponent; Contractor
Employment	<p>Decommissioning of the facility may lead to retrenchments or re-location of staff no longer required.</p>	<p>Plan in advance for meeting the Labour Acts requirements for retrenching of staff if required.</p> <p>Where possible staff can be relocated to another facility or town where business continues in the same way.</p>	<p>During normal operations of the facility records must be compiled that includes the appropriate plans for handling of employees should the facility be decommissioned. The report</p>	Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Dust	Dust will be generated during the Decommissioning Phase and might be aggravated during periods of strong winds.	It is recommended that regular dust suppression be included in the Decommissioning Phase, when dust becomes an issue. Personnel should be issued with dust masks for health and safety reasons.	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.	Proponent; Contractor
Noise	Noise pollution will exist due to heavy vehicles accessing the site to collect rubble from demolished building materials. Cranes may be erected for removing the huge storage tanks. Hammers, diggers and drills will be used.	The site is situated within a mixed residential and 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 decommissioning. Notice of the start of the decommissioning should be given to the local authorities with an invitation to give feedback at any time with regards the noise impact.	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.	Proponent; Contractor
Visual Impact	This is an impact that affects the aesthetic appearance	Visual impact could pose one of the most significant impacts. Visual impacts could be limited through keeping all decommissioned areas clean and orderly at all times. Good housekeeping also reduces the risk of injuries. Notice of the start of the decommissioning should be given to the local authorities with an invitation to give feedback at any time with regards the visual impact.	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.	Proponent; Contractor
Groundwater, Surface Water and Soil Contamination	Porous surface substrate can allow unwanted hazardous and ecologically detrimental substances to seep down to the water table.	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	Report form for all spills or leaks is to be completed by Contractor and submitted to the Karasburg Town Council HSE department.	Proponent; Contractor

Criteria	Nature	Mitigation	Monitoring	Responsible Body
		<p>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>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 pre-construction baseline 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 decommissioning phase similar risks to human beings as with previous phases will be present. Once the tanks and pipelines have been emptied completely of their contents residual amounts of fuel might exist. All other risks associated with demolitions must be considered.</p>	<p>The decommissioning of a fuel retail 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); ● 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. 	<p>A register of all incidents must be maintained. This should include measures taken to ensure that such incidents do not repeat it self.</p>	Proponent; Contractor
Fire and Explosion Hazard	<p>Residual hydrocarbons could be present and might pose a risk to the teams dismantling the various structures. Fire</p>	<p>Various international occupational health and safety performances should be consulted for specific regulations regarding the decommissioning of the facility to ensure all</p>	<p>A register of all incidents must be maintained on a daily basis. This should</p>	Proponent; Contractor

Criteria	Nature and/or explosion events are still possible.	Mitigation 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. 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.	Monitoring include measures taken to ensure that such incidents do not repeat it self.	Responsible Body

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

Faul A, Botha P, Brunette C. 2018. Environmental Impact Assessment for the Construction and Operations of a Fuel Retail Facility and Truck Port for Karas Oasis Petroleum Trading CC in Karasburg