

**GOREANGAB WATERFRONT SERVICE STATION  
WINDHOEK**

**UPDATED ENVIRONMENTAL MANAGEMENT PLAN**



**Assessed by:**




**Assessed for:**

**True – Gem Investments CC**


May 2023



<b>Project:</b>	<b>UPDATED ENVIRONMENTAL MANAGEMENT PLAN FOR THE GOREANGAB WATERFRONT SERVICE STATION, WINDHOEK</b>	
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<b>Report Approval</b>	 <b>André Faul</b> Conservation Ecology	

I \_\_\_\_\_ acting as the Proponent's representative (True – Gem Investments 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 14<sup>th</sup> day of June 2023.

  
True – Gem Investments CC

CC | 2011 | 1971  
Company Registration Number



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## 1 INTRODUCTION

True-Gem Investment CC requested Geo Pollution Technologies (GPT) to update their Environmental Management Plan (EMP) for the existing Goreangab Waterfront Service Station, Windhoek. The facility is situated on erf 77 GG off Eveline Street in Goreangab, Windhoek (Figure 1-1). The Environmental Management Plan (EMP) provides management options to ensure impacts of the facility 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, operations and decommissioning) of the fuel retail facility. All employees, contractors and sub-contractors taking part in the operations of the facility should be made aware of the contents of the EMP, so as to plan the relevant activities accordingly in an environmentally sound manner.

The objectives of the EMP are:

- ◆ to include all components of the operations of the facility;
- ◆ to prescribe the best practicable control methods to lessen the environmental impacts associated with 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 operational personnel.

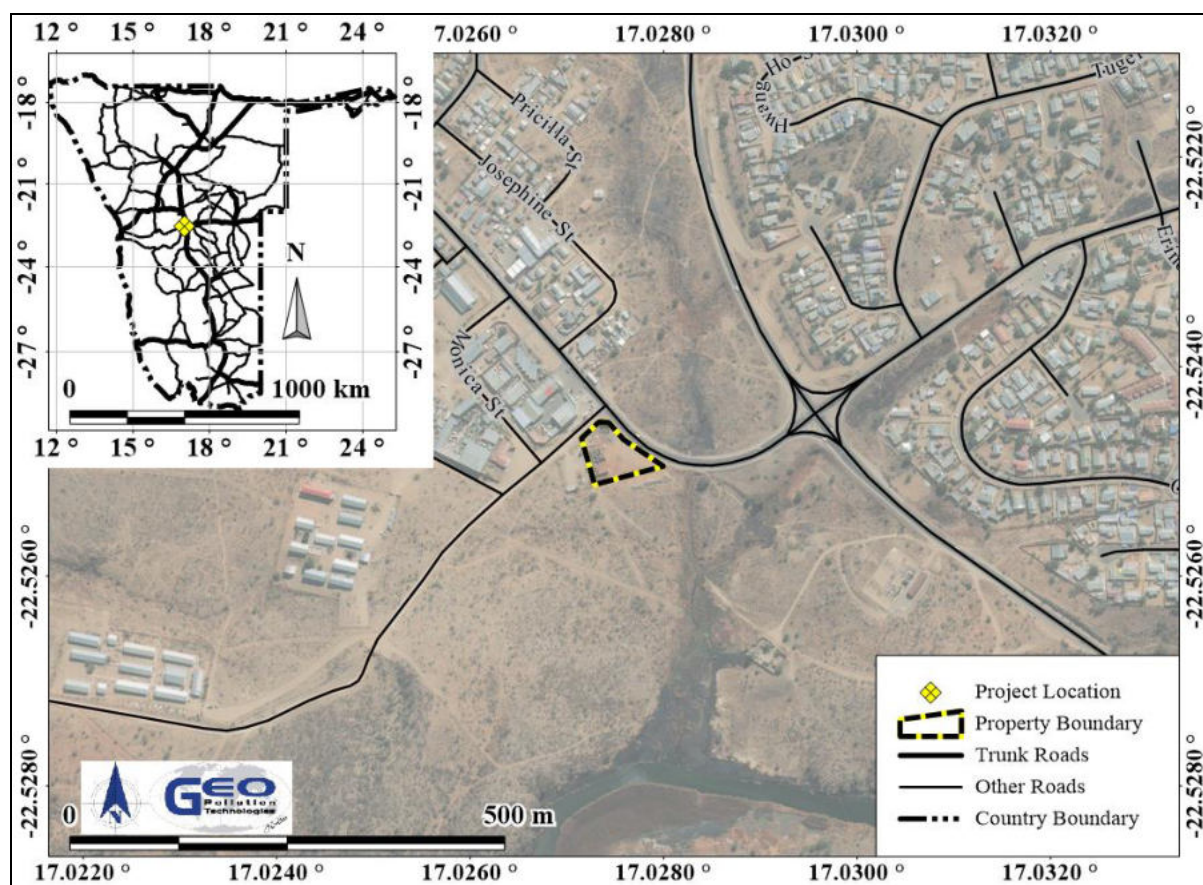


Figure 1-1 Project location

## 2 ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS

To protect the environment and achieve sustainable development, all projects, plans, programmes and policies deemed to have adverse impacts on the environment require an environmental assessment, as per the Namibian legislation. The legislation and standards provided in Table 2.1 to Table 2.4 govern the environmental assessment process in Namibia and/or are relevant to the facility.

**Table 2.1 Namibian law applicable to the fuel retail facility**

<b>Law</b>	<b>Key Aspects</b>
<b>The Namibian Constitution</b>	Promote the welfare of people Incorporates a high level of environmental protection Incorporates international agreements as part of Namibian law
<b>Environmental Management Act</b> Act No. 7 of 2007, Government Notice No. 232 of 2007	Defines the environment Promote sustainable management of the environment and the use of natural resources Provide a process of assessment and control of activities with possible significant effects on the environment
<b>Environmental Management Act Regulations</b> Government Notice No. 28-30 of 2012	Commencement of the Environmental Management Act List activities that requires an environmental clearance certificate Provide Environmental Impact Assessment Regulations
<b>Petroleum Products and Energy Act</b> Act No. 13 of 1990, Government Notice No. 45 of 1990	Regulates petroleum industry Makes provision for impact assessment Petroleum Products Regulations (Government Notice No. 155 of 2000) <ul style="list-style-type: none"> <li>o Prescribes South African National Standards (SANS) or equivalents for construction, operation and decommissioning of petroleum facilities (refer to Government Notice No. 21 of 2002)</li> </ul> Used Mineral Oil Regulations (Government Notice No. 48 of 1991) <ul style="list-style-type: none"> <li>Regulations relating to the purchase, sale, supply, acquisition, possession, disposal, storage, transportation, recovery and re-refinement of used mineral oil</li> </ul>
<b>The Water Act</b> Act No. 54 of 1956	Remains in force until the new Water Resources Management Act comes into force Defines the interests of the state in protecting water resources Controls water abstraction and the disposal of effluent Numerous amendments
<b>Water Resources Management Act</b> Act No. 11 of 2013	Provide for management, protection, development, use and conservation of water resources Prevention of water pollution and assignment of liability Not in force yet
<b>Local Authorities Act</b> Act No. 23 of 1992, Government Notice No. 116 of 1992	Define the powers, duties and functions of local authority councils Regulates discharges into sewers
<b>Public and Environmental Health Act</b> Act No. 1 of 2015, Government Notice No. 86 of 2015	Provides a framework for a structured more uniform public and environmental health system, and for incidental matters Deals with Integrated Waste Management including waste collection disposal and recycling; waste generation and storage; and sanitation
<b>Labour Act</b> Act No 11 of 2007, Government Notice No. 236 of 2007	Provides for Labour Law and the protection and safety of employees Labour Act, 1992: Regulations relating to the health and safety of employees at work (Government Notice No. 156 of 1997)



<b>Law</b>	<b>Key Aspects</b>
<b>Atmospheric Pollution Prevention Ordinance</b> Ordinance No. 11 of 1976	Governs the control of noxious or offensive gases Prohibits scheduled process without a registration certificate in a controlled area Requires best practical means for preventing or reducing the escape into the atmosphere of noxious or offensive gases produced by the scheduled process
<b>Hazardous Substances Ordinance</b> Ordinance No. 14 of 1974	Applies to the manufacture, sale, use, disposal and dumping of hazardous substances as well as their import and export Aims to prevent hazardous substances from causing injury, ill-health or the death of human beings
<b>Pollution Control and Waste Management Bill (draft document)</b>	Not in force yet Provides for prevention and control of pollution and waste Provides for procedures to be followed for licence applications

**Table 2.2 City of Windhoek regulations, plans and policies**

<b>Groundwater Protection Regulations</b>	<ul style="list-style-type: none"> <li>◆ Provides for the protection of groundwater, landscape and vegetation sensitivity</li> <li>◆ Requires an EIA and EMP for projects that may potentially impact on groundwater</li> <li>◆ Identifies three groundwater control zones: medium, high and very high.</li> </ul>
<b>Windhoek Environmental Structure Plan and Environmental Policy</b>	<ul style="list-style-type: none"> <li>◆ Integrates spatial planning decision-making, environmental planning and environmental impact management</li> </ul>
<b>Town Planning Scheme</b>	<ul style="list-style-type: none"> <li>◆ Enables the comprehensive management of all property and related public sector functions across the city.</li> <li>◆ Provides for the protection of groundwater and the environment.</li> <li>◆ Prohibits any sewer, septic tank, pit latrine, VIP or French drain within 500 m of any private or production borehole without council's consent.</li> <li>◆ Sets the Southern Development Limit for Windhoek.</li> </ul>
<b>Municipal Council of Windhoek: Noise Control Regulations</b> General Notice No. 77 of 2006	<ul style="list-style-type: none"> <li>◆ Resolution 215/09/2006 dealing with noise</li> <li>◆ Impose various noise limits for residential commercial and industrial areas for day and night time.</li> <li>◆ Restricts noise reaching single residential areas at 55 dBA during the day and 45 dBA at night.</li> </ul>
<b>Drainage and Sewage Regulations</b>	<ul style="list-style-type: none"> <li>◆ Regulates discharges into sewer systems.</li> <li>◆ Provides standards to which effluents entering a sewer system must adhere.</li> <li>◆ Regulates storm water run-off.</li> </ul>

**Table 2.3 Relevant multilateral environmental agreements for Namibia and the development.**

Agreement	Key Aspects
<b>Stockholm Declaration on the Human Environment, Stockholm 1972.</b>	Recognizes the need for a common outlook and common principles to inspire and guide the people of the world in the preservation and enhancement of the human environment
<b>1985 Vienna Convention for the Protection of the Ozone Layer</b>	Aims to protect human health and the environment against adverse effects from modification of the Ozone Layer are considered  Adopted to regulate levels of greenhouse gas concentration in the atmosphere
<b>United Nations Framework Convention on Climate Change (UNFCCC)</b>	The Convention recognises that developing countries should be accorded appropriate assistance to enable them to fulfil the terms of the Convention
<b>Convention on Biological Diversity, Rio de Janeiro, 1992</b>	Under article 14 of The Convention, EIAs must be conducted for projects that may negatively affect biological diversity

**Table 2.4 Standards or codes of practise**

Standard or Code	Key Aspects
<b>South African National Standards (SANS)</b>	The Petroleum Products and Energy Act prescribes SANS standards for the construction, operations and demolition of petroleum facilities  SANS 10089-3:2010 is specifically aimed at storage and distribution of petroleum products at fuel retail facilities and consumer installations <ul style="list-style-type: none"> <li>○ Provide requirements for spill control infrastructure</li> </ul>

The fuel retail facility is listed as an activity requiring an ECC as per the following points from Section 9 of Government Notice No. 29 of 2012:

#### Hazardous Substance Treatment, Handling and Storage

9.1 “The manufacturing, storage, handling or processing of a hazardous substance defined in the Hazardous Substances Ordinance, 1974.” (The facility stores and handles hazardous substances in the form of fuel.)

9.2 “Any process or activity which requires a permit, licence or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, licence or authorisation or which requires a new permit, licence or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste.” (The facility stores and handles hazardous substances in the form of fuel which is permitted by the Ministry of Mines and Energy.)

9.4 “The storage and handling of a dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 cubic meters at any one location.” (Total storage capacity for fuel is 138 m<sup>3</sup>).

9.5 “Construction of filling stations or any other facility for the underground and aboveground storage of dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin.” (The facility is a filling station that stores diesel and unleaded petrol below ground.)

### 3 THE EMP

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The following general guidance for the EMP is based on the findings of the EIA and risk assessment carried out by Geo Pollution Technologies (Botha & Faul 2013).

#### 3.1 Land Use, Planning, Construction and Operation – Identified Impacts

The following is the summary of the identified impacts:

- ◆ The existing site for the proposed fuel retail facility does not breach any of the requirements in the Namibian laws or any of the codes regulating the use of hazardous materials.
- ◆ The current zoning designates the area as suitable for the operation of the fuel retail facility;
- ◆ The risk of an accident/incident causing fires or explosions is considered to be high. Human factors have been considered and the best engineering must go in to the creation of a very safe fuel retail facility.
- ◆ Noise and traffic impacts may occur during normal operations of the facility.

#### 3.2 Land Use, Planning, Construction and Operation – Mitigating Measures

The following is a summary of the management plan, which will make the fuel retail facility safe taking into consideration all the risk perceptions raised by all stakeholders:

- ◆ Appointment of a reputable contractor and adhering to industry specifications and SANS standards would mitigate possible operational impacts.
- ◆ To prevent product loss where rupture of pipeline or hose might occur during the offloading operation, all nozzles on the road tankers 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 will be captured by spill containment structures.
- ◆ Training of personnel and regular fire fighting exercises should be carried out pertaining to the location and use of existing fire fighting equipment and safety controls, like emergency shut down switches, extinguishers etc. This would reduce the risk of fire and its spread to neighbouring properties.
- ◆ Noise and traffic impacts can be successfully mitigated through implementing management procedures.

### 4 THE IMPLEMENTATION OF THE EMP

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Table 4.1 to Table 4.3 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
- ◆ 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 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.

All monitoring results must be reported on as indicated and submitted to the Ministry of Environment, Forestry and Tourism every six months as per the conditions on their environmental clearance certificate. These are required for any future renewals of the environmental clearance certificate.

Table 4.1 Planning phase

Activity	Objective	Action	Timing	Proof of Compliance	Responsible Body
<b>Compliance</b>	To comply with all legal requirements for the operations of the facility in Namibia.	Apply for or renew the necessary permits from the various ministries, local authorities and any other bodies that governs the operations of the facility. 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.	During operations and prior to decommissioning activities	All contracts, permits, certificates and other legal documents on file.	Proponent
<b>Appointments</b>	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 contractors, sub-contractors, employees and all personnel who will be present on site.	During operations and prior to decommissioning activities	Contracts on file	Proponent; Contractor
<b>Management</b>	Establish / maintain 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, equipment and personnel in place to deal with all emergencies: Risk Management / Mitigation / Environmental Management Plan/ Emergency Response Plan and HSE Manuals Adequate protection and indemnity insurance cover for incidents;	During operations and prior to decommissioning activities	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
<b>Restoration Fund/Insurance</b>	To establish a fund/insurance for future environmental restoration or pollution remediation if ever required.	Comply with the provisions of all relevant safety standards; Procedures, equipment and materials required for emergencies. 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.	During operations and prior to decommissioning activities	Financial statements of restoration fund/insurance	Proponent; Independent Specialist Consultant
<b>Reporting</b>	To establish / maintain 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 monitoring reports to the Department of Environmental Affairs every six months as per their requirements. This is required for future Environmental Clearance Certificate renewal applications.	During operations and decommissioning activities	Monitoring Reports	Proponent; Contractor
<b>Environmental Clearance Renewal</b>	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 4.2 The Operational phase

Criteria	Nature	Mitigation	Monitoring	Responsible Body
<b>Skills, Technology and Development</b>	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 retail 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.	<b>Bi-annual</b> report based on actual training and the enhancement of skills and transfer of technology should be compiled.	Proponent
<b>Demographic and Community Health</b>	The trucking and distribution of fuel to Windhoek could contribute to the spread of HIV / AIDS. The facility has been operational for many years and no change in the demographic profile is expected from its continued operations.	Restricted employment for Windhoek residents 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 town and thereby reduce growth in the informal settlement and maintain property prices.	<b>Bi-annual</b> summary report based on educational programmes and training conducted. <b>Bi-annual</b> report and review of employee demographics.	Proponent
<b>Employment</b>	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 town, then the region and then nationally. Deviations from this practice must be justified	<b>Bi-annual</b> summary report based on employee records.	Proponent
<b>Secure Fuel Supply</b>	The operation of the facility will aid in securing fuel supply to locals, travellers and the transport industry.	Regular tank dips and fuel volume reconciliation to ensure fuel is ordered before it is depleted. Plan in advance for peak tourist seasons and holidays when the demand for fuel increase.	Fuel volume reconciliations on file. <b>Bi-annual</b> summary report on fuel volumes, discrepancies, etc.	Proponent
<b>Traffic</b>	The site is located in Eveline Street in Windhoek in a mixed land use area.	During periods of increased fuel demand such as prior to fuel price increases and in peak tourist season enough	Any complaints received regarding traffic issues	Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
	<p>Traffic to the fuel retail facility will vary with fluctuations in fuel demand and possibly following announcements of fuel price increases.</p> <p>Vehicles fuelled are expected to be small to medium sized cars and some larger trucks.</p>	<p>attendants must be on duty to prevent cars waiting for refuelling.</p>	<p>should be recorded together with action taken to prevent impacts from repeating itself.</p> <p>A <b>bi-annual</b> report should be compiled of all incidents reported, complaints received, and action taken.</p>	
<b>Fire and Explosion Hazard</b>	<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"> <li>● A holistic fire protection and prevention plan is needed. This plan must include an emergency response plan, firefighting plan and spill recovery plan.</li> <li>● 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).</li> <li>● Maintain firefighting equipment, good housekeeping and personnel training (firefighting, fire prevention and responsible housekeeping practices).</li> </ul> <p><b>Fire Fighting and Fire Prevention:</b></p> <ul style="list-style-type: none"> <li>● Ensure all chemicals are stored according to MSDS and SANS instructions.</li> <li>● Maintain regular site, mechanical and electrical inspections and maintenance.</li> <li>● Clean all spills / leaks.</li> <li>● 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).</li> <li>● Follow SANS standards for operation and maintenance of the facility.</li> <li>● All dispensers must be equipped with devices that cut fuel supply during fires.</li> <li>● The proponent should liaise with the local Fire</li> </ul>	<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 <b>bi-annual</b> 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
<b>Health, Safety and Security</b>	<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"> <li>● Breathing in excessive fumes</li> <li>● Slipping on wet surfaces</li> <li>● Product contact with eyes and skin</li> <li>● Staff not wearing protective clothing</li> <li>● Carcinogenic effects of some petroleum products</li> </ul>	<p>Brigade to ensure that all fire requirements are met. This includes, but is not limited to SANS 10400 T: 2011.</p> <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"> <li>● Operational and procedural manuals</li> <li>● Health and safety training</li> <li>● Housekeeping rules</li> <li>● Colour coding areas, pipes, equipment and substances</li> <li>● Signage for personal protective equipment (e.g. protective clothing like safety boots and hard hats)</li> <li>● Safe work procedures and permits to work</li> <li>● Clearance certificates for confined spaces</li> <li>● Emergency response plans</li> <li>● Material Safety Data Sheets (MSDS)</li> <li>● First aid treatment and training</li> <li>● Medical procedures and emergency services</li> <li>● Daily safety moments and/or drills</li> </ul> <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 <b>bi-annual</b> 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
<b>Noise</b>	Noise pollution will exist due to vehicles accessing the site to offload fuel or refuel.	<p>The Windhoek Municipality has regulations with regard to noise levels. Council Resolution 215/09/2006 on maximum noise levels should be followed during the operational phase.</p> <p>Public address systems may not be used on site without prior arrangement with the Municipality.</p>	<p>Maintain a complaints register.</p> <p><b>Bi-annual</b> report on complaints and actions taken to address complaints and prevent future occurrences.</p>	Proponent
<b>Waste Production</b>	Waste is produced during normal operations. These can be soils that	Waste reduction measures should be implemented and all	A register of hazardous waste disposal should be	Proponent



Criteria	Nature	Mitigation	Monitoring	Responsible Body
	<p>become contaminated with fuel, domestic waste from bins, offices and ablution facilities. Contamination of fuel through accidental mixing of products results in hazardous waste.</p> <p>Any contaminated material (soils, building rubble and empty chemical containers) should be treated as hazardous waste.</p>	<p>waste that can be re-used / recycled must be kept separate.</p> <p>Ensure adequate disposal facilities are available that ensures waste cannot be blown away by wind and prevent scavenging (human and non-human) of waste storage.</p> <p>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).</p> <p>Hazardous waste may not be mixed with other waste streams and should be disposed of as hazardous waste at an appropriately classified facility.</p> <p>See the material safety data sheets available from suppliers for disposal of contaminated products and empty containers.</p> <p>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</p> <p>Liaise with the municipality regarding waste disposal 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>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>The oil water separator must be regularly inspected and all hydrocarbons removed once detected. Outflow water must comply with effluent quality standards.</p> <p>All information and reporting to be included in a <b>bi-annual</b> report.</p>	
<p><b>Groundwater, Surface Water and Soil Contamination</b></p>	<p>Porous surface substrate can allow unwanted hazardous and ecologically detrimental substances to seep down to the water table.</p> <p>Surface runoff from the site is expected in a westerly direction. Runoff of pollutants from the tanks is not expected to reach any nearby surface water due to spill control and the design of the</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"> <li>● Spill control structures and procedures must be in place according to SANS standards or better.</li> <li>● All fuelling should be conducted on surfaces provided for this purpose. E.g. Concrete slabs with regularly maintained seals between slabs.</li> <li>● The procedures followed to prevent environmental damage during service and maintenance, and</li> </ul>	<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</p>	<p>Proponent; Independent Specialist Consultant</p>

Criteria	Nature	Mitigation	Monitoring	Responsible Body
	<p>facility. It is unlikely that a release of fuel would cause an impact on any nearby surface water.</p> <p>Groundwater is utilized in the area for human consumption and should be protected at all costs.</p> <p>Proper containment mechanisms installed should contain any release that might take place from spillages during operation of the facility.</p>	<p>compliance with these procedures, including the correct use of sumps and regular reporting of spillages must be audited and corrections made where necessary.</p> <ul style="list-style-type: none"> <li>● Proper training of operators must be conducted on a regular basis.</li> <li>● Any spillage of more than 200 l must be reported to the Ministry of Mines and Energy and remediation instituted.</li> <li>● Spill clean-up means must be available on site as per the relevant MISDS.</li> </ul>	<p>conducted to determine the extent of pollution.</p> <p>A <b>bi-annual</b> report should be compiled of all spills or leakages reported. The report should contain the following information:</p> <ul style="list-style-type: none"> <li>● date and duration of spill</li> <li>● product spilled</li> <li>● volume of spill</li> <li>● remedial action taken</li> <li>● comparison of pre-exposure baseline data with post remediation data (e.g. soil hydrocarbon concentrations)</li> <li>● copy of documentation in which spill was reported to Ministry of Mines and Energy</li> </ul>	
<b>Ecological Impact</b>	<p>The effect of operational activities on the ecosystem functioning and biodiversity.</p>	<p>Report any extraordinary sightings to the Ministry of Environment and Tourism.</p> <p>Mitigation measures related to waste handling and the 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 discouraged where possible.</p>	<p>A record should be kept of any extraordinary fauna sightings or encounters on site.</p> <p>All data to be compiled in a <b>bi-annual</b> report.</p>	Proponent
<b>Visual Impact</b>	<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</p>	<p>A maintenance record should be kept.</p> <p>A <b>bi-annual</b> report should</p>	Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
<b>Cumulative Impact</b>	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>maintained.</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>be compiled of all complaints received and actions taken</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>	Proponent

Table 4.3 Decommissioning phase

Criteria	Nature	Mitigation	Monitoring	Responsible Body
<b>Waste Production</b>	<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 fuel retail site or sold.</p> <p>Those items that cannot be used again must be scrapped in the appropriate manner.</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 Windhoek 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>	Proponent; Contractor
<b>Ecological Impact</b>	<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 MET 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 MET 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
<b>Employment</b>	<p>Decommissioning of the fuel retail 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>During normal operations of the facility a report must be compiled that includes the appropriate plans for handling of employees should the facility be decommissioned. The report should include budgeting for</p>	Proponent

Criteria	Nature	Mitigation	Monitoring retrenchments and possible alternative positions elsewhere.	Responsible Body
<b>Dust</b>	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
<b>Noise</b>	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.	Noise levels during this phase should follow the Windhoek Municipality's guidelines on noise (Council Resolution 215/09/2006). During decommissioning noise levels might be high. This will however be short lived. 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 to 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; Public Relations Personnel; Contractor.
<b>Visual Impact</b>	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 to 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
<b>Groundwater, Surface Water and Soil Contamination</b>	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 underground utilities (i.e. fresh water supply to buildings,	Report form for all spills or leaks is to be completed by Contractor and submitted to the HSE. A baseline study must be carried out after the	Proponent; Contractor

Criteria	Nature	Mitigation	Monitoring	Responsible Body
<b>Health, Safety and Security</b>	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>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>	This is to 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.	Proponent; Contractor
<b>Fire and Explosion Hazard</b>	Residual hydrocarbons could be present and might pose a risk to the teams dismantling the various structures. Fire and/or explosion events are still possible.	<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"> <li>● Proper training of operators;</li> <li>● First aid treatment;</li> <li>● Medical assistance;</li> <li>● Emergency treatment;</li> <li>● Prevention of inhalation of fumes (fuel);</li> <li>● Protective clothing, footwear, gloves and belts; safety goggles and shields;</li> <li>● 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.</li> <li>● 24-hour security surveillance in case of opportunistic activities.</li> </ul>	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 itself.	Proponent; Contractor
<b>Fire and Explosion Hazard</b>	Residual hydrocarbons could be present and might pose a risk to the teams dismantling the various structures. Fire and/or explosion events are still possible.	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	A register of all incidents must be maintained on a daily basis. This should include measures taken to ensure that such incidents do	Proponent; Contractor

Criteria	Nature	Mitigation	Monitoring	Responsible Body
		<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 fuel storage facility. Regular inspections should still be carried out to inspect and test firefighting 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 firefighting equipment, but more importantly, it involves premeditated measures and activities to timeously prevent, curb and avoid conditions that may result in fires.</p>	<p>not repeat itself.</p>	

## **5 CONCLUSIONS**

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The above environmental management plan, 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 project stage, it needs to be reviewed throughout all phases.

The EMP 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, and 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 for to allow for future renewal of the environmental clearance certificate.

## **6 REFERENCES**

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Botha P, Faul A; 2013 September; Environmental Impact Assessment for the Proposed Puma Energy Fuel Retail Facility on Erf 77, Eveline Street, Windhoek.