

APP-006479

**CONTINUED OPERATIONS OF CROSSROADS SERVICE STATION,
SWAKOPMUND**

UPDATED ENVIRONMENTAL MANAGEMENT PLAN



Prepared by:



Prepared for:



September 2025

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Report Approval:	 André Faul Conservation Ecologist	

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

Signed at Walvis bay on the 01 day of October 2025.


Puma Energy (Namibia) (Pty) Ltd

Puma Energy (Pty) Ltd
CY/1994/0600
Company Registration Number
CO. Reg No: CY/1994/0600

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMS	Environmental Management System
HIV	Human Immunodeficiency Virus
LNAPL	Light Non-Aqueous Phase Liquids
MEFT	Ministry of Environment, Forestry and Tourism
MSDS	Material Safety Data Sheet
PPE	Personal Protective Equipment
SANS	South African National Standards
WHO	World Health Organization

GLOSSARY OF TERMS

Assessment - The process of collecting, organising, analysing, interpreting and communicating information relevant to decision making.

Competent Authority - means a body or person empowered under the local authorities act or Environmental Management Act to enforce the rule of law.

Construction - means the building, erection or modification of a facility, structure or infrastructure that is necessary for the undertaking of an activity, including the modification, alteration, upgrading or decommissioning of such facility, structure or infrastructure.

Cumulative Impacts - in relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

Environment - As defined in the Environmental Assessment Policy and Environmental Management Act - “land, water and air; all organic and inorganic matter and living organisms as well as biological diversity; the interacting natural systems that include components referred to in sub-paragraphs, the human environment insofar as it represents archaeological, aesthetic, cultural, historic, economic, palaeontological or social values”.

Environmental Impact Assessment (EIA) - process of assessment of the effects of a development on the environment.

Environmental Management Plan (EMP) - A working document on environmental and socio-economic mitigation measures, which must be implemented by several responsible parties during all the phases of the proposed project.

Environmental Management System (EMS) - An Environment Management System, or EMS, is a comprehensive approach to managing environmental issues, integrating environment-oriented thinking into every aspect of business management. An EMS ensures environmental considerations are a priority, along with other concerns such as costs, product quality, investments, PR productivity and strategic planning. An EMS generally makes a positive impact on a company's bottom line. It increases efficiency and focuses on customer needs and marketplace conditions, improving both the company's financial and environmental performance. By using an EMS to convert environmental problems into commercial opportunities, companies usually become more competitive.

Evaluation – means the process of ascertaining the relative importance or significance of information, the light of people's values, preference and judgements in order to make a decision.

Hazard - Anything that has the potential to cause damage to life, property and/or the environment. The hazard of a particular material or installation is constant; that is, it would present the same hazard wherever it was present.

Mitigate - The implementation of practical measures to reduce adverse impacts.

Proponent (Applicant) - Any person who has submitted or intends to submit an application for an authorisation, as legislated by the Environmental Management Act no. 7 of 2007, to undertake an activity or activities identified as a listed activity or listed activities; or in any other notice published by the Minister or Ministry of Environment, Forestry and Tourism.

Public - Citizens who have diverse cultural, educational, political and socio-economic characteristics. The public is not a homogeneous and unified group of people with a set of agreed common interests and aims. There is no single public. There are a number of publics, some of whom may emerge at any time during the process depending on their particular concerns and the issues involved.

Significant Effect/Impact - means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.

1 INTRODUCTION

Puma Energy (Namibia) (Pty) Ltd (the Proponent) requested Geo Pollution Technologies (Pty) Ltd to update the existing environmental management plan (EMP) for Crossroads Service Station in Swakopmund. The updated EMP will be submitted to the Ministry of Environment, Forestry and Tourism (MEFT) to renew their existing environmental clearance certificate (ECC-01815) for the facility. The renewed ECC is required for operations and construction (care and maintenance) of their fuel retail facility situated on erf 2820 of Swakopmund Extension 7, Mc Hugh Street, Swakopmund (Figure 1-1). The property is currently zoned for business purposes. Operations of the fuel retail facility include filling of the underground storage tanks from road transport tankers; dispensing of fuel to customers; tank dips and fuel volume reconciliation; and general operational activities and maintenance procedures associated with a fuel retail facility.

The EMP provides management options to ensure impacts of the facility is 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 management measures provided in the EMP should be adhered to during the various phases of the operation of the facility. The EMP acts as a stand-alone document. All personnel taking part in the operations of the facility should be made aware of the contents in this section, so as to plan the operations accordingly and in an environmentally sound manner.

The objectives of the EMP are:

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

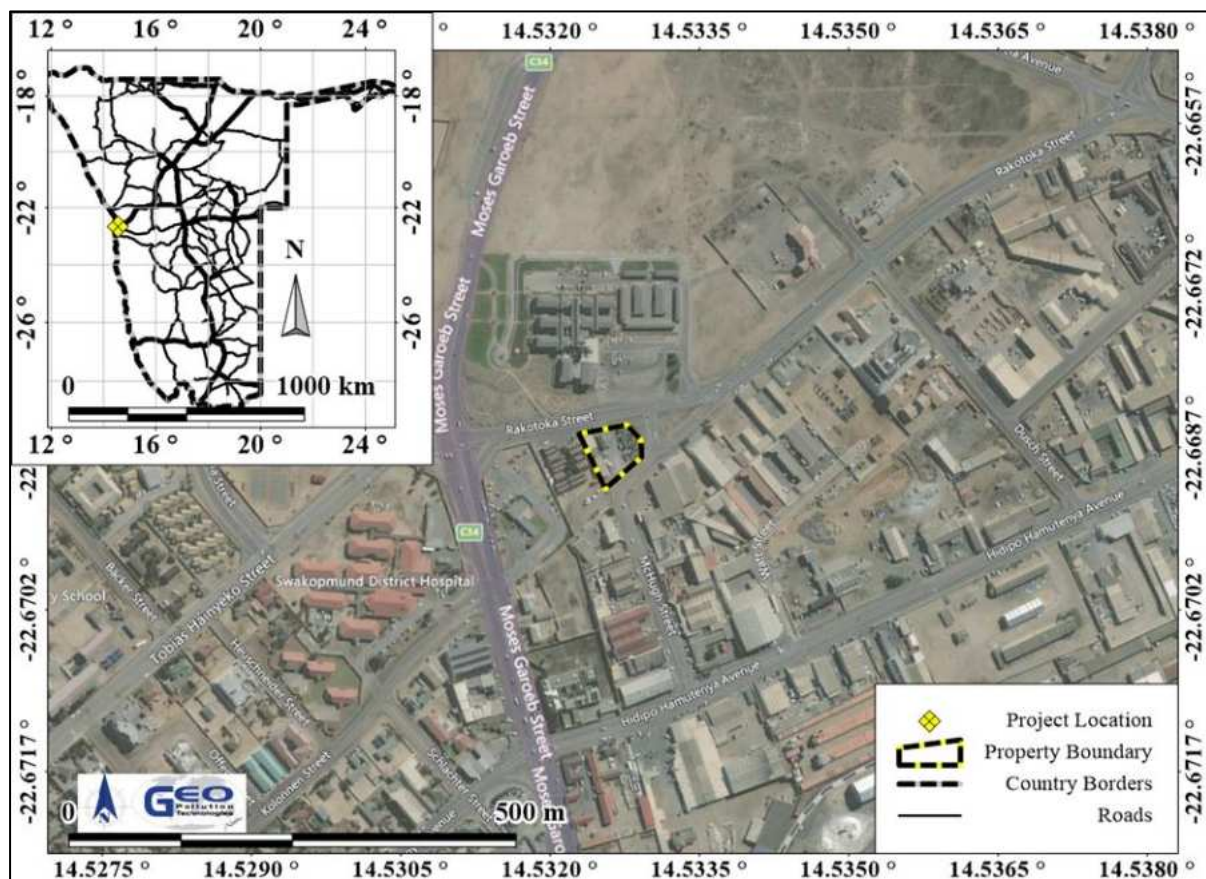


Figure 1-1 Project location

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 2-3 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

Law	Key Aspects
The Namibian Constitution	◆ Promote the welfare of people ◆ Incorporates a high level of environmental protection ◆ Incorporates international agreements as part of Namibian law
Environmental Management Act 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
Environmental Management Act Regulations Act No. 7 of 2007, 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
Petroleum Products and Energy Act 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) ○ Prescribes South African National Standards (SANS) or equivalents for construction, operation and decommissioning of petroleum facilities (refer to Government Notice No. 21 of 2002) ◆ Used Mineral Oil Regulations (Government Notice No. 48 of 1991) ○ Regulations relating to the purchase, sale, supply, acquisition, possession, disposal, storage, transportation, recovery and re-refinement of used mineral oil
Water Resources Management Act Act No. 11 of 2013, Government Notice No. 269 of 2023	◆ Provide for management, protection, development, use and conservation of water resources ◆ Prevention of water pollution and assignment of liability
Local Authorities Act 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
Public and Environmental Health Act 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
Labour Act 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)

Law	Key Aspects
Atmospheric Pollution Prevention Ordinance 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
Hazardous Substances Ordinance 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
Pollution Control and Waste Management Bill (draft document)	• 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 Relevant multilateral environmental agreements for Namibia and the facility

Agreement	Key Aspects
Stockholm Declaration on the Human Environment, Stockholm 1972.	• 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
1985 Vienna Convention for the Protection of the Ozone Layer	• 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
United Nations Framework Convention on Climate Change (UNFCCC)	• The Convention recognises that developing countries should be accorded appropriate assistance to enable them to fulfil the terms of the Convention
Convention on Biological Diversity, Rio de Janeiro, 1992	• Under article 14 of The Convention, EIAs must be conducted for projects that may negatively affect biological diversity

Table 2-3 Standards or codes of practise

Standard or Code	Key Aspects
South African National Standards (SANS)	• 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 ○ Provide requirements for spill control infrastructure

The fuel retail facility is listed as an activity requiring an environmental clearance certificate 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 store and handle 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 store and handle hazardous substances in the form of fuel which is permitted by the Ministry of Industries, 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 exceeds 30 m³).
- ◆ 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 IMPLEMENTATION OF THE EMP

The sections below outline the management of the environmental elements that may be affected by the activities associated with the various phases of the facility. These phases are as follows:

- ◆ Planning Phase
- ◆ Operational and Construction (maintenance, upgrades etc.) 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. Impacts addressed and mitigation measures proposed are seen as minimum requirements which have to be elaborated on. Delegation of mitigation measures and reporting activities should be determined by the Proponent and included in the EMP.

All monitoring results must be reported on as indicated. Reporting is important for any future renewals of the ECC and must be submitted to the Ministry of Environment, Forestry and Tourism. Renewal of ECC will require bi-annual reports based on the monitoring prescribed in this EMP.

Various potential and definite impacts will emanate from the operations and decommissioning phases. The majority of these impacts can be mitigated or prevented. The impacts as well as prevention and mitigation measures are listed below. The general guidance and impact descriptions provided below is based on the findings of the initial EIA and risk assessment carried out by Geo Pollution Technologies (Botha et al., 2018).

3.1 PLANNING

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

- ◆ Ensure that all necessary permits from the various ministries, local authorities and any other bodies that governs the construction activities and operations of the project remain valid.
- ◆ Ensure all appointed contractors and employees enter into an agreement which includes the EMP. Ensure that the contents of the EMP are understood by the contractors, sub-contractors, employees and all personnel present or who will be present on site.
- ◆ Make provisions to have a Health, Safety and Environmental Coordinator to implement the EMP and oversee occupational health and safety as well as general environmental related compliance at the site.
- ◆ Have the following on site where reasonable to deal with all potential emergencies:
 - EMP, HSE Manuals, Safety Standards, Material Safety Data Sheets (MSDS)
 - Emergency plans, equipment and personnel
 - Adequate protection and indemnity insurance cover for incidents
- ◆ If one has not already been established, establish and maintain a fund for future ecological restoration of the project site, should project activities cease and the site is decommissioned and environmental restoration or pollution remediation is required.

- ◆ Establish and / or maintain a reporting system to report on aspects of construction activities, operations and decommissioning as per the conditions of the ECC.
- ◆ Submit bi-annual reports to the MEFT as per the conditions of the ECC.
- ◆ Appoint a specialist environmental consultant to update the EMP and apply for renewal of the ECC prior to expiry.

3.2 MANAGEMENT OF IMPACTS: OPERATIONS AND CONSTRUCTION

The following section provide management measures for both the operational phase as well as construction activities related to the project.

3.2.1 Skills, Technology and Development

During various phases of the facility, 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.

Desired outcome: To see an increase in skills of local Namibians, as well as development and technology advancements in the fuel retail industry.

Actions

Enhancement:

- ◆ If the skills exist locally, contractors must first be sourced from the town, then the region and then nationally. Deviations from this practice must be justified.
- ◆ Skills development and improvement programs to be made available as identified during performance assessments.
- ◆ Employees to be informed about parameters and requirements for references upon employment.
- ◆ The proponent must employ Namibians where possible. Deviations from this practise should be justified appropriately.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ 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.
- ◆ Summarise all training (formal and informal) in a bi-annual report.

3.2.2 Employment

Continued operations and maintenance of the facility relies on employment. Skilled and unskilled labourers are employed or contracted for various tasks of operations and maintenance. Unskilled labour may be sourced locally while it is expected that skilled contractors within Namibia will be used for specialised work. The presence of the facility therefore contributes to employment creation in the skilled and unskilled labour sector.

Desired Outcome: Provision of employment to local Namibians.

Actions

Enhancement:

- ◆ 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.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Bi-annual summary report based on employee records.

3.2.3 Revenue Generation

Retailing of fuel contributes to revenue generation which is paid to the national treasury while also contributing to the local economy in terms of increased spending power of employees as well as the sourcing of goods and services.

Desired Outcome: Contribution to national treasury and remuneration in accordance with Namibian law

Actions

Enhancement:

- ◆ The Proponent must employ or contract local Namibians where possible.
- ◆ Payment of taxes, levies, salaries, etc. in accordance with Namibian law.
- ◆ Sourcing of local goods and services as far as is practically possible.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Bi-annual summary report based on employee records.

3.2.4 Demographic Profile and Community Health

The facility relies on labour during construction and operational phases. The scale of the project is limited and it is not foreseen that it has or will in future create a change in the demographic profile of the local community. Exposure to factors such as communicable disease like HIV/AIDS as well as alcoholism / drug abuse are often associated with the trucking industry. Spills and leaks may present risks to members of the public especially if groundwater is polluted.

Desired Outcome: To prevent the in-migration and growth in informal settlements and to prevent the spread of communicable diseases and prevent / discourage socially deviant behaviour.

Actions:

Prevention:

- ◆ 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 which includes, but is not limited to, sand and grease traps for the various facilities and sanitation requirements.

Mitigation:

- ◆ Educational programmes for employees on HIV/AIDs and general upliftment of employees' social status.
- ◆ Appointment of reputable contractors.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Facility inspection sheet for all areas, which may present environmental health risks, kept on file.
- ◆ Bi-annual summary report based on employee demographics, educational programmes and training conducted.

3.2.5 Fuel Supply

The operation of the facility aid in securing fuel supply to the residents, patrons and business in Swakopmund.

Desired Outcome: Ensure a secure fuel supply remains available.

Actions

Mitigation:

- ◆ Ensure compliance to the petroleum regulations of Namibia.
- ◆ Proper fuel management to ensure constant supply.
- ◆ Record supply problems and take corrective actions.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Record supply problems and corrective actions taken.

3.2.6 Traffic

The facility have increased the traffic flow to the site through the provision of fuel. An increase in traffic to and from the site may increase congestion and increase the risk of incidents and accidents, especially during delivery of fuel.

Desired Outcome: Minimum impact on traffic and no transport or traffic related incidents.

Actions

Prevention:

- ◆ Erect clear signage regarding access and exit points at the facility.
- ◆ During peak holiday season, a sufficient number of pump attendants must be on duty to ensure service to clients are fast and efficient. This will reduce queuing and possible traffic related impacts.

Mitigation:

- ◆ Tanker trucks delivering fuel should not be allowed to obstruct any traffic in surrounding streets.
- ◆ Traffic management during fuel deliveries or when traffic impacts are expected.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Any complaints received regarding traffic issues should be recorded together with action taken to prevent impacts from repeating itself.
- ◆ A bi-annual report should be compiled of all incidents reported, complaints received, and action taken.

3.2.7 Health, Safety and Security

The operations of the facility rely on human labour and therefore exposes them to health and safety risks. Activities such as the operation of machinery and handling of hazardous chemicals (inhalation and carcinogenic effect of some petroleum products), poses the main risks to employees. Security risks are related to unauthorized entry, theft and sabotage.

Desired Outcome: To prevent injury, health impacts and theft.

Actions

Prevention:

- ◆ 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.).
- ◆ All health and safety standards specified in the Labour Act should be complied with.
- ◆ Clearly label dangerous and restricted areas as well as dangerous equipment and products, especially during the construction phase.
- ◆ Equipment on site must be locked away or placed in a way that does not encourage criminal activities (e.g. theft).
- ◆ Provide all employees with required and adequate personal protective equipment (PPE).
- ◆ Ensure that all personnel receive adequate training on operation of equipment/handling of hazardous substances.
- ◆ Implementation of maintenance register for all equipment and fuel / hazardous substance storage areas.
- ◆ 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.
- ◆ Security procedures and proper security measures must be in place to protect workers and clients.
- ◆ Develop emergency response plans for all possible health, safety and security impacts and appoint responsible personnel in key positions to activate and oversee such plans when required.

Mitigation:

- ◆ For all emergency situations, the appropriate emergency response plan must be implemented as soon as possible in order to minimize the magnitude of impacts or prevent such impacts from developing into more severe impacts.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Any incidents must be recorded with action taken to prevent future occurrences.
- ◆ A bi-annual report should be compiled of all incidents reported. The report should contain dates when training were conducted and when safety equipment and structures were inspected and maintained.

3.2.8 Fire

Fuel, especially unleaded petrol, is highly flammable and therefore presents a fire risk. Operational and maintenance activities may increase the risk of fires. The site is located in a built-up area which increases the difficulty of fighting fires.

Desired Outcome: To prevent property damage, possible injury and impacts caused by uncontrolled fires.

Actions:

Prevention:

- ◆ A holistic fire protection and prevention plan is needed. This plan must include an emergency response plan, firefighting plan and spill recovery plan.
- ◆ Maintain firefighting equipment, good housekeeping and personnel training (firefighting, fire prevention and responsible housekeeping practices).
- ◆ Ensure all chemicals are stored according to MSDS and SANS instructions.
- ◆ Maintain regular site, mechanical and electrical inspections and maintenance.
- ◆ Clean all spills / leaks.
- ◆ Special note must be taken of the regulations stipulated in sections 47 and 48 of the Petroleum Products and Energy Act, 1990 (Act No. 13 of 1990).
- ◆ Follow SANS standards for operation and maintenance of the facility.
- ◆ All dispensers must be equipped with devices that cut fuel supply during fires.
- ◆ Ensure all pump attendants are trained on the importance of filling only suitable containers with fuel as well as earthing of such containers when filling with unleaded petrol which can accumulate static electricity.

Mitigation:

- ◆ In case of a fire, the firefighting plan must be initiated immediately and all emergency procedures must be performed as practiced during training. This includes notifying the fire brigade, engaging emergency stops, using fire extinguishers, evacuation, etc.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ 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.
- ◆ 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 and training given.

3.2.9 Air Quality

Fuel vapours are released into the air during refuelling of bulk storage tanks as well as at filling points. Prolonged exposure may have carcinogenic effects. Dust may be generated should any construction take place.

Desired Outcome: To prevent health impacts and minimise the dust generated.

Actions

Mitigation:

- ◆ Personnel issued with appropriate masks where excessive dust or vapours are present.
- ◆ A complaints register should be kept for any dust related issues and mitigation steps taken to address complaints where necessary e.g. dust suppression.
- ◆ Employees should be coached on the dangers of fuel vapours.
- ◆ Vent pipes must be properly placed as per SANS requirements.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Any complaints received regarding dust or fuel vapours should be recorded with notes on action taken.
- ◆ All information and reporting to be included in a bi-annual report.

3.2.10 Noise

Noise pollution will exist due to heavy and light motor vehicles accessing the site to offload fuel or refuel. A fuel retail facility is a 24 hour operation which means that vehicle noise is generated throughout the day and night. Construction (maintenance and upgrades) may generate excessive noise.

Desired Outcome: To prevent any nuisance and hearing loss due to elevated noise levels.

Actions

Prevention:

- ◆ Follow the Health and Safety Regulations of the Labour Act and World Health Organization (WHO) guidelines on maximum noise levels (Guidelines for Community Noise, 1999) to prevent hearing impairment and a nuisance to nearby receptors.
- ◆ All machinery must be regularly serviced to ensure minimal noise production.
- ◆ Keep volume of public address systems at levels that will not be a nuisance to neighbours.
- ◆ Manage noise caused by clients – loud music, etc.

Mitigation:

- ◆ Hearing protectors as standard PPE for workers in situations with elevated noise levels.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Health and Safety Regulations of the Labour Act and WHO Guidelines.
- ◆ Maintain a complaints register.
- ◆ Bi-annual report on complaints and actions taken to address complaints and prevent future occurrences.

3.2.11 Waste production

Various waste streams are produced during the operational phase. Waste may include hazardous waste associated with the handling of hydrocarbon products. Domestic waste is generated by the facility and related operations. Waste presents a contamination risk and when not removed regularly may become a fire hazard. Construction waste may include building rubble and discarded equipment contaminated by hydrocarbon products. Contaminated soil and water is considered as a hazardous waste.

Desired Outcome: To reduce the amount of waste produced, and prevent pollution and littering.

Actions

Prevention:

- ◆ Waste reduction measures should be implemented and all waste that can be re-used / recycled must be kept separate.
- ◆ Ensure adequate temporary waste storage facilities are available.
- ◆ Ensure waste cannot be blown away by wind.
- ◆ Prevent scavenging (human and non-human) of stored waste.

Mitigation:

- ◆ 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).
- ◆ 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.
- ◆ See the material safety data sheets available from suppliers for disposal of contaminated products and empty containers.
- ◆ Liaise with the municipality regarding waste and handling of hazardous waste.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ A register of hazardous waste disposal should be kept. This should include type of waste, volume as well as disposal method/facility.
- ◆ Any complaints received regarding waste should be recorded with notes on action taken.
- ◆ The oil water separator must be regularly inspected and all hydrocarbons removed once detected. Outflow water must comply with effluent quality standards.
- ◆ All information and reporting to be included in a bi-annual report.

3.2.12 Ecosystem and Biodiversity Impact

The nature of the operational activities is such that the probability of creating a habitat for flora and fauna to establish is low. No significant impact on the biodiversity of the area is predicted as the site is already developed and void of natural fauna and flora. Impacts are therefore mostly related to pollution of the environment.

Desired Outcome: To avoid pollution of and impacts on the ecological environment.

Actions.

Prevention:

- ◆ Contain all food related waste as to prevent animals from scavenging and dispose of such waste regularly to prevent the attraction of vermin by such waste.
- ◆ Discourage birds from utilising structures on site for purposes of nesting.

Mitigation:

- ◆ Report any extraordinary animal sightings to the Ministry of Environment, Forestry and Tourism.
- ◆ Mitigation measures related to waste handling and the prevention of groundwater, surface water and soil contamination should limit ecosystem and biodiversity impacts.

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ All information related to extraordinary sightings or problems with animals to be included in a bi-annual report.

3.2.13 Groundwater, Surface Water and Soil Contamination

Operations entail the storage and handling of various hydrocarbons (such as fuels and lubricants) which present a contamination risk. Contamination may either result from failing storage facilities, or spills and leaks associated with fuel handling. The facility provides fuel to public vehicles which may further present contamination risks through overfills. Such material may contaminate surface water, soil and groundwater.

Modern retail facilities are well designed to prevent leakages and spillages from contaminating soil and water, and where leaks or spills occur, that it is contained.

Desired Outcome: To prevent the contamination of water and soil.

Actions

Prevention:

- ◆ 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, must be audited and corrections made where necessary.
- ◆ Proper training of operators must be conducted on a regular basis (Fuel handling, spill detection, spill control).

Mitigation:

- ◆ Any spillage of more than 200 litre must be reported to the Ministry of Mines and Energy.
- ◆ Spill clean-up means must be readily available on site as per the relevant MSDS.
- ◆ All spills must be cleaned up immediately.
- ◆ The spill catchment traps and oil water separator should be cleaned regularly and waste disposed of at a suitably classified hazardous waste disposal facility.
- ◆ Surfactants (soap) may not be allowed to enter the oil water separator. Importantly, the use of soap on spill control surfaces connected to the separator should not be allowed.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Inspection holes at the ends of the tanks must as a minimum be inspected every 14 days and measurements must be recorded for future reference. Inspection must include the evaluation of LNAPL on the water surface, if water is present.
- ◆ A report should be compiled bi-annually of all spills or leakages reported. The report should contain the following information: date and duration of spill, product spilled, volume of spill, remedial action taken, comparison of pre-exposure baseline data (previous pollution conditions survey results) with post remediation data (e.g. soil/groundwater hydrocarbon concentrations) and a copy of documentation in which spill was reported to Ministry of Industries, Mines and Energy.

3.2.14 Visual Impact

This is an impact that not only affects the aesthetic appearance, but also the integrity of the facility.

Desired Outcome: To minimise aesthetic impacts associated with the facility.

Actions

Mitigation:

- ◆ Regular waste disposal, good housekeeping and routine maintenance on infrastructure will ensure that the longevity of structures are maximised and a low visual impact is maintained.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ A bi-annual report should be compiled of all complaints received and actions taken.

3.2.15 Cumulative Impact

Possible cumulative impacts associated with the operational phase include increased traffic in the area. This will have a cumulative impact on traffic flow on surrounding streets.

Desired Outcome: To minimise cumulative all impacts associated with the facility.

Actions

Mitigation:

- ◆ Addressing each of the individual impacts as discussed and recommended in the EMP would reduce the cumulative impact.
- ◆ Reviewing biannual and annual reports for any new or re-occurring impacts or problems would aid in identifying cumulative impacts and help in planning if the existing mitigations are insufficient

Responsible Body:

- ◆ Proponent

Data Sources and Monitoring:

- ◆ Bi-annual reports based on all other impacts will provide an overall assessment of the impact of the operational and maintenance phases.

3.3 DECOMMISSIONING AND REHABILITATION

Decommissioning is not foreseen during the validity of the ECC. Decommissioning was however assessed as construction activities include modification and decommissioning. Should decommissioning occur at any stage, rehabilitation of the area may be required. Decommissioning will entail the complete removal of all infrastructure including buildings and underground infrastructure. Any pollution present on the site must be remediated. The impacts associated with this phase include noise and waste production as structures are dismantled. Noise must be kept within Health and Safety Regulations of the Labour Act and WHO standards and waste should be contained and disposed of at an appropriately classified and approved waste facility and not dumped in the surrounding areas. Future land use after decommissioning should be assessed prior to decommissioning and rehabilitation initiated if the land would not be used for future purposes. The EMP for the facility will have to be reviewed at the time of decommissioning to cater for changes made to the site and implement guidelines and mitigation measures.

3.4 ENVIRONMENTAL MANAGEMENT SYSTEM

The proponent could implement an Environmental Management System (EMS) for their 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 EMS would need to include the following elements:

- ◆ A stated environmental policy which sets the desired level of environmental performance;
- ◆ An environmental legal register;
- ◆ An institutional structure which sets out the responsibility, authority, lines of communication and resources needed to implement the EMS;
- ◆ Identification of environmental, safety and health training needs;
- ◆ An environmental program(s) stipulating environmental objectives and targets to be met, and work instructions and controls to be applied in order to achieve compliance with the environmental policy;
- ◆ Periodic (internal and external) audits and reviews of environmental performance and the effectiveness of the EMS; and
- ◆ The EMP.

4 CONCLUSION

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.

5 REFERENCES

Botha P, Bosman Q, Brunette C, Coetzer W, Short S; 2018 July; Operations of the Crossroads Service Station: Environmental Assessment Scoping Report