

APP-007090

**DECOMMISSIONING OF A BULK FUEL STORAGE
FACILITY AND THE CONSTRUCTION OF A BULK
STORAGE FACILITY FOR LIQUEFIED PETROLEUM
GAS, WINDHOEK
ENVIRONMENTAL MANAGEMENT PLAN**



Assessed by:



Assessed for:



January 2026

Project:	DECOMMISSIONING OF A BULK FUEL STORAGE FACILITY AND THE CONSTRUCTION OF A BULK STORAGE FACILITY FOR LIQUEFIED PETROLEUM GAS, WINDHOEK: ENVIRONMENTAL MANAGEMENT PLAN
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1 INTRODUCTION

Geo Pollution Technologies (Pty) Ltd (GPT) was appointed by Vivo Energy Namibia (Pty) Ltd (the Proponent) to undertake an environmental scoping report and develop an environmental management plan (EMP) for the decommissioning of a bulk fuel storage facility and the construction of a bulk storage facility for liquefied petroleum gas, on erf 7997, Iscor Street, Northern Industrial area, Windhoek (Figure 1-1). The main operational activities will include:

- ◆ Decommissioning and removal of bulk fuel storage infrastructure;
- ◆ Removal of all other existing infrastructure;
- ◆ Construction of bulk storage tanks for LPG and related infrastructure;
- ◆ Loading and unloading of LPG;
- ◆ Handling and storage of LPG;
- ◆ Dispensing and sales of LPG to customers, and
- ◆ Daily maintenance activities.

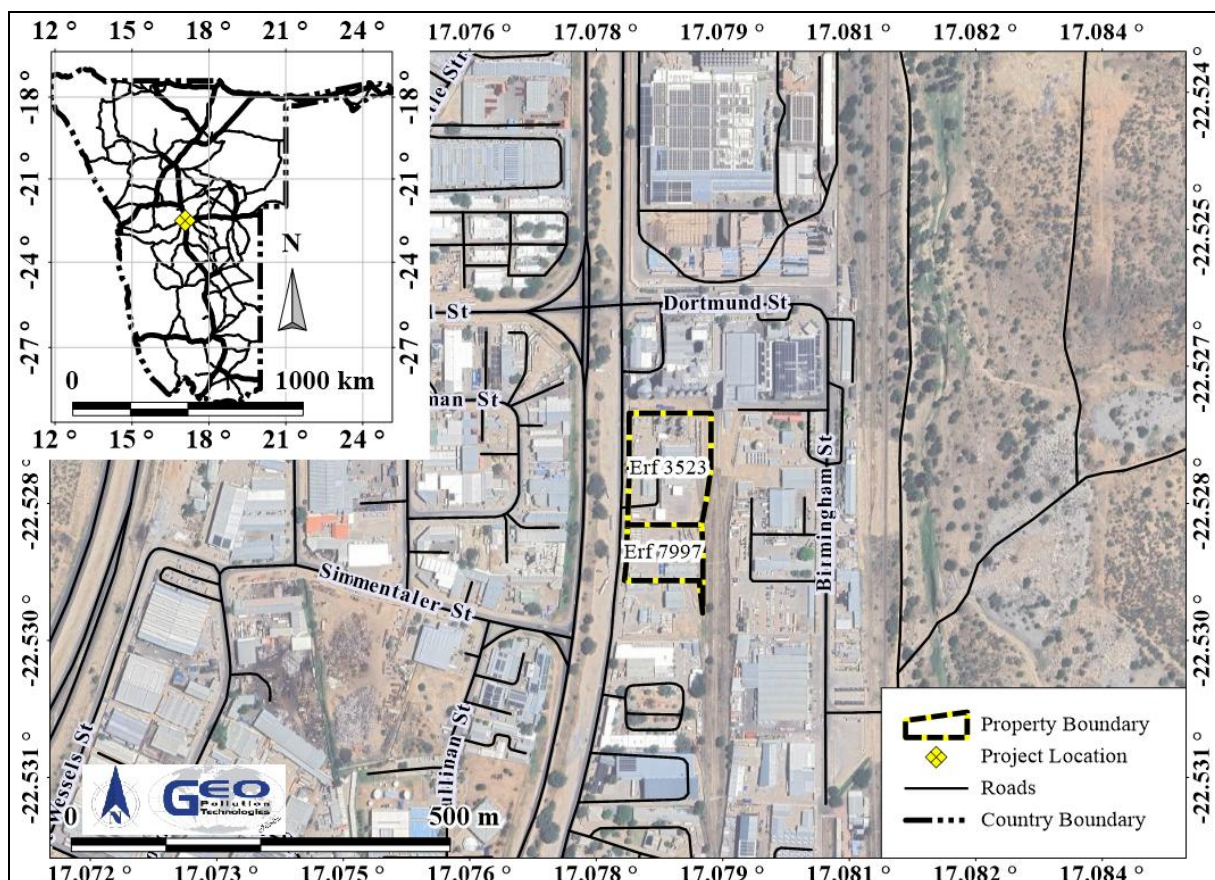


Figure 1-1 Project location

2 ENVIRONMENTAL MANAGEMENT PLAN

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 environmental management measures are provided in the tables and descriptions below. These management measures should be adhered to during the various phases of the construction and operations of the facility. This section of the report can act as a stand-alone document. All personnel taking part in the construction and operations of the facility should be made aware of the contents in this section.

The objectives of the EMP are:

- ◆ to include all components of decommissioning, 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 construction and operational personnel in applying such controls; and
- ◆ to ensure that appropriate environmental training is provided to responsible construction and operational personnel.

Various potential and definite impacts will emanate from the construction, operational and decommissioning phases. The majority of these impacts can be mitigated or prevented. The impacts, risk rating of impacts as well as prevention and mitigation measures are listed below.

As described below, impacts related to the construction and operational phases are expected to mostly be of low to medium significance and can mostly be mitigated to have a low significance. The extent of impacts are mostly site specific to local and are not of a permanent nature. Due to the nature of the surrounding areas, cumulative impacts are possible and include noise pollution and traffic impacts.

2.1 PLANNING

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

- ◆ Notify the petroleum inspectors of the Ministry of Industries, Mines and Energy prior to decommissioning of the bulk fuel storage facility.
- ◆ Ensure that all necessary permits from the various ministries, local authorities and any other bodies that governs the construction (maintenance) and operations of the facility are in place and 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 (HSE) Coordinator to implement the EMP and oversee occupational health and safety as well as general environmental related compliance at the site.
- ◆ Make provisions to have a community liaison officer on-site who will handle complaints and community input, and through whom, where reasonable, monitoring data can be requested. Communicate the contact details of the community liaison officer to interested and affected parties when the project is initiated.
- ◆ Have the following on-site to deal with all potential emergencies:
 - Emergency response plan and HSE manuals;
 - Adequate protection and indemnity insurance cover for incidents;
 - Relevant safety standards;
 - Procedures, equipment and materials required for emergencies.
- ◆ If one has not already been established, establish and maintain a fund for future ecological restoration of the project site, should project activities cease and the site is decommissioned and environmental restoration or pollution remediation is required.
- ◆ Establish and / or maintain a reporting system to report on aspects of construction activities, operations and decommissioning as outlined in the EMP.
- ◆ Prepare and submit environmental monitoring reports as per the conditions of the ECC.
- ◆ Appoint a specialist environmental consultant to update the EIA and EMP and apply for renewal of the ECC prior to expiry.

2.1.1 Revenue Generation

The project will contribute to national and local revenue streams during the decommissioning construction and operational phases. During the construction phase, wages and salaries will be paid to both skilled and unskilled workers, creating short-term income opportunities. In the operational phase, the employment of skilled and professional staff will, with their wages and salaries, contribute to increased household spending power in the local economy. The retailing of LPG will generate revenue through taxes and levies paid to the national treasury while also contributing to the local economy in term of increase 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.

2.1.2 Skills, Technology and Development

During construction and operations of the facility, training is provided to a portion of the workforce to be able to perform their duties according to the required standards. Skills are transferred to an unskilled workforce for general tasks. The development of people and technology is key to the economic development of the town, region and nationally.

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

Actions

Enhancement:

- ◆ If the skills exist locally, contractors and employees must first be sourced from the town, 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 the parameters and requirements for references upon employment.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ A record should be kept of the 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 summary reports on all training conducted.

2.1.3 Demographic Profile and Community Health

The facility relies on labour for construction and operations. 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 diseases like HIV/AIDS as well as alcoholism / drug abuse, is often associated with the trucking industry (i.e. LPG deliveries). Leaks may present risks to members of the public, especially in the event of a gas leak.

Desired Outcome: To prevent the in-migration and growth in informal settlements and to prevent the spread of diseases such as HIV/AIDS.

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
- ◆ Contractors

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 educational programmes and training conducted.
- ◆ Bi-annual report and review of employee demographics.

2.1.4 Traffic

The presence of the facility will result in an increase in traffic flow in the area, particularly associated with customer vehicles and the periodic delivery of LPG by road tankers. This may increase the risk of traffic incidents, especially during offloading activities. During the decommissioning and construction phase, temporary traffic impacts may also occur as a result of heavy vehicles accessing the site for the delivery and removal of construction materials and equipment. These impacts will be managed through appropriate traffic control measures and coordination with the relevant authorities to ensure safe access to and from the site.

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.
- ◆ Schedule LPG deliveries and construction vehicle movements outside peak traffic hours where possible.
- ◆ Tanker trucks collecting and delivering LPG should not be allowed to obstruct any traffic.

Mitigation:

- ◆ If any traffic impacts are expected, traffic management should be performed.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

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

2.1.5 Health, Safety and Security

Activities associated with the decommissioning, construction and operational phases rely on human labour and, therefore, will expose them to health and safety risks. During decommissioning and construction risks may include those linked to earthworks, infrastructure removal, and development, as well as the presence of moving vehicles and machinery. In the operational phase, the handling of LPG can rapidly result in asphyxiation when inhaled. Skin or eye contact with LPG leaking or escaping from high-pressure vessels can result in frostbite or irritation. Lifting of heavy cylinders or equipment can result in injuries. Access to the site by unauthorised persons with the intent of arson, theft or sabotage of product or equipment must be prevented.

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 (personal protective equipment (PPE), flammable etc.).
- ◆ Manuals and training regarding the correct handling of LPG should be in place and updated as new or updated MSDS's become available. Ensure that all personnel receive adequate training on the operation of equipment/handling of hazardous substances.
- ◆ Ensure that worker exposure to LPG does not exceed the NIOSH Recommended Exposure Limit (REL) and OSHA Permissible Exposure Limit (PEL) of 1,000 ppm (1,800 mg/m³) as an 8-hour time-weighted average (TWA).
- ◆ 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.
- ◆ 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.
- ◆ 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.
- ◆ Provide all employees with the required and adequate PPE.
- ◆ Implementation of a maintenance register for all equipment and gas / hazardous substance storage areas.
- ◆ Security procedures and proper security measures must be in place to protect workers and clients.
- ◆ Equipment on-site must be locked away or placed in a way that does not encourage criminal activities (e.g. theft).
- ◆ Conduct regular health checks and medical surveillance of staff exposed to hazardous substances, in line with occupational health guidelines.

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.
- ◆ For security incidents, ensure proper reporting, investigation and follow-up actions to strengthen future prevention measures.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Any incidents must be recorded with action taken to prevent future occurrences.

- ◆ A report should be compiled bi-annually of all incidents reported. The report should contain dates when training was conducted and when safety equipment and structures were inspected and maintained.

2.1.6 Fire

Decommissioning, construction and operational activities may increase the risk of fire hazards. During the decommissioning of the fuel depot, unleaded petrol can act as a static accumulator and may ignite if handled incorrectly. During operational activities LPG will be extremely flammable, and a fire or boiling liquid expanding vapour explosion (BLEVE) risk exists. Precautions must be put in place to prevent their ignition and associate fire risks and subsequent safety risks which may arise.

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

Actions:

Prevention:

- ◆ A holistic fire protection and prevention plan must be developed for the site, and it should specifically take into account flammable products stored on-site. This plan must include an emergency response plan, firefighting plan and a spill recovery plan and should have dedicated assigned personnel to oversee their development and implementation.
- ◆ Storage and handling of LPG and other gases must be according to SANS 10087.
- ◆ All LPG storage and handling facilities in Namibia must comply with strict safety distances and fire precautions and control as prescribed by API Standards and/or SANS. SANS is adopted by the Ministry of Mines and Energy as the national standard.
- ◆ Firefighting equipment must be maintained and regularly serviced.
- ◆ All pressure release valves should regularly be inspected and serviced.
- ◆ Regular personnel training (firefighting, fire prevention and responsible housekeeping practices).
- ◆ Ensure adequate water supply is available on-site for firefighting purposes.
- ◆ Conduct fire drills regularly to test response readiness.
- ◆ Ensure all chemicals are stored strictly according to MSDS and SANS instructions. This includes segregation of incompatible products.
- ◆ Maintain regular site, mechanical and electrical inspections and perform regular maintenance.

Mitigation:

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

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ A register of all incidents must be maintained daily. This should include measures taken to ensure that such incidents do not repeat themselves.
- ◆ 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 and when training was given.

2.1.7 Air Quality

LPG vapours should normally not be released into the atmosphere. LPG can have serious health effects and can lead to rapid asphyxiation. Construction and refurbishment activities may cause dust where soil surfaces are exposed.

Desired Outcome: To prevent health impacts related to reduced air quality.

Actions

Mitigation:

- ◆ Employees should be informed about the dangers of LPG vapours.
- ◆ All filling of cylinders should take place in a well ventilated area.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

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

2.1.8 Noise

Noise pollution may be generated due to heavy - and light motor vehicles accessing the site for the decommissioning, construction purposes and to offload LPG or refill cylinders during operations. Construction and refurbishment activities may result in a temporary increase in noise levels.

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

Actions

Prevention:

- ◆ Follow the Labour Act and Municipal Council of Windhoek: Noise Control Regulations - General Notice No. 77 of 2006 to prevent hearing impairment and a nuisance at nearby receptors.
- ◆ All machinery must be regularly serviced to ensure minimal noise production.
- ◆ Restrict construction activities that generate excessive noise to daytime working hours.

Mitigation:

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

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Labour Act Health and Safety Regulations and the Municipal Council of Windhoek: Noise Control Regulations (Council Resolution 215/09/006).
- ◆ Maintain a complaints register.
- ◆ Bi-annual report on complaints and actions taken to address complaints and prevent future occurrences.

2.1.9 Waste Production

Waste will be produced during the decommissioning, construction and operational phases of the facility. This will include building rubble, hazardous waste associated with the handling of hydrocarbon products as well as maintenance waste such as building rubble and discarded equipment contaminated by hydrocarbons. Contaminated soil and water are also considered as hazardous waste. Waste presents a contamination risk and, if not removed regularly, may become a fire hazard.

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 reused/recycled must be kept separate.
- ◆ Ensure adequate waste storage facilities are available.
- ◆ Train employees and contractors in proper waste segregation and handling procedures.
- ◆ Establish agreements with licensed waste contractors for collection and safe disposal.
- ◆ Ensure waste cannot be blown away by the wind.
- ◆ Prevent scavenging (human and non-human) of stored waste.

Mitigation:

- ◆ Waste should be disposed of regularly and at appropriately classified disposal facilities, which include hazardous material (empty chemical containers, contaminated rugs, paper, water and soil).
- ◆ Contaminated soil from spills during the decommissioning and construction phase should be excavated immediately and disposed of at an approved hazardous waste facility.
- ◆ See the MSDS available from suppliers for disposal of contaminated products and empty containers.
- ◆ Liaise with the town council regarding waste and the handling of hazardous waste.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ A register of hazardous waste disposal should be kept. This should include the type of waste, volume, as well as disposal method/facility.
- ◆ Any complaints received regarding waste should be recorded with notes on action taken.
- ◆ All information and reporting are to be included in a bi-annual report.

2.1.10 Ecosystem and Biodiversity Impact

The site has previously been developed and is mostly devoid of vegetation. The nature of the operational activities is such that the probability of creating a habitat for flora and fauna to establish is low. Ecosystem or biodiversity impacts are mostly associated with pollution of the environment.

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

Actions.

Prevention:

- ◆ Educate all contracted and permanent employees on the value of biodiversity.

Mitigation:

- ◆ Contain construction material and activities on-site.
- ◆ Report any extraordinary animal sightings to the MEFT.
- ◆ Mitigation measures related to waste handling and the prevention of groundwater, surface water and soil contamination should limit ecosystem and biodiversity impacts.
- ◆ Prevent scavenging of waste by fauna.
- ◆ The establishment of habitats and nesting sites at the facility should be avoided where possible.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Any ecologically significant events or sightings to be included in a bi-annual report.

2.1.11 Groundwater, Surface Water and Soil Contamination

Leakages from vehicles and accidental fuel, oil or hydraulic fluid spills can result in groundwater, surface water and soil contamination in the area. Bulk fuel storage tanks and pipelines may contain fuel residues during decommissioning and this should be prevented from spilling. The change from petrol and diesel storage on site to LPG storage should reduce the risk of soil and groundwater pollution. Firefighting chemicals used during training and firefighting drills and actual event may contaminate soil and groundwater. Firefighting chemicals must be carefully selected to pose no to minimum risks to the environment. The usage of PFAS (per- and polyfluoroalkyl substances) -containing foams should be avoided.

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

Actions

Prevention:

- ◆ All construction and or maintenance machines should be maintained to be in a good working condition during operation.
- ◆ Employ drip trays and spill kits during construction when on-site servicing/repairs of equipment are needed.
- ◆ 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 regularly (gas handling, spill detection, and spill control).
- ◆ Usage of PFAS (per- and polyfluoroalkyl substances) -containing foams should be avoided.

Mitigation:

- ◆ Where needed hydrocarbon polluted soil should be excavated and removed or in-situ remediation applied where needed.
- ◆ Spill clean-up means must be readily available on-site as per the relevant MSDS, and all spills must be cleaned up immediately.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ 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, and comparison of pre-exposure baseline data (previous pollution conditions survey results) with post-remediation data (e.g. soil / groundwater hydrocarbon concentrations).

2.1.12 Visual Impact

This is an impact that not only affects the aesthetic appearance but also the integrity of the facility. The general upkeep and maintenance of the facility will not only reduce any negative visual impacts but also ensure the longevity of the structures and buildings.

Desired Outcome: To minimise aesthetic impacts associated with the facility and prevent lighting from being a visual disturbance.

Actions

Mitigation:

- ◆ Regular waste disposal, good housekeeping and routine maintenance on infrastructure will ensure that the longevity of structures is maximised, and a low visual impact is maintained.
- ◆ Minimum lighting necessary for operations to be used at night. The installation of auto-dimming lights when no movement is detected is desirable.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

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

2.1.13 Cumulative Impact

Possible cumulative impacts will arise during the decommissioning, construction and operational phases of the facility. Construction activities may temporarily increase traffic and noise in the immediate area due to the movement of heavy vehicles and machinery. During the operational phase, cumulative impacts will include increased traffic and associated noise linked to LPG deliveries and customer vehicles accessing the site.

Desired Outcome: To minimise all cumulative 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 bi-annual and annual reports for any new or recurring impacts or problems would aid in identifying cumulative impacts and help in planning if the existing mitigations are insufficient.

Responsible Body:

- ◆ Proponent
- ◆ Contractors

Data Sources and Monitoring:

- ◆ Review bi-annual reports to determine the overall impact of the operational phase.

2.2 DECOMMISSIONING AND REHABILITATION

Decommissioning is anticipated during the validity period of the ECC, and it is being evaluated as part of the environmental assessment process. Rehabilitation of the affected area may be required to restore the site to an acceptable condition.

The decommissioning process will involve the complete removal of all infrastructure, including buildings and underground installations. Any pollution identified on-site must be addressed through appropriate remediation actions. This includes surveying soil conditions to identify potential hydrocarbon contamination, followed by the implementation of suitable remediation measures as required.

During the decommissioning phase, anticipated impacts include elevated noise levels and the generation of waste as structures are dismantled. All noise generated must comply with the Labour Act Health and Safety Regulations and adhere to the City of Windhoek's prescribed noise limits. Furthermore, waste generated throughout the process must be securely contained and transported to an appropriately classified and approved waste disposal facility; under no circumstances should waste be dumped in the surrounding environment.

2.3 ENVIRONMENTAL MANAGEMENT SYSTEM

The Proponent could implement an EMS for their operations. An EMS is an internationally recognised 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.

3 CONCLUSIONS

The EMP should be used as an on-site reference document for the operations of the facility. Parties responsible for transgressing of the EMP should be held responsible for any rehabilitation that may need to be undertaken. The Proponent could use an in-house health, safety, security and environment management system (EMS) in conjunction with the EMP. All operational personnel must be taught the contents of these documents.