

OPERATIONS OF THE TRANS CAPRIVI SERVICE CENTRE IN GROOTFONTEIN

UPDATED ENVIRONMENTAL MANAGEMENT PLAN



Prepared by:



Prepared for:



July 2024


Project	UPDATED ENVIRONMENTAL MANAGEMENT PLAN FOR THE OPERATIONS OF THE TRANS CAPRIVI SERVICE CENTRE IN GROOTFONTEIN	
Report Date	July 2024	
Prepared for	TotalEnergies Marketing Namibia (Pty) Ltd PO Box 4223 Windhoek Namibia	
Lead Consultant	Geo Pollution Technologies (Pty) Ltd PO Box 11073 Windhoek Namibia	TEL.: (+264-61) 257411 FAX.: (+264) 88626368
Main Project Team	André Faul (B.Sc. Zoology/Biochemistry); (B.Sc. (Hons) Zoology); (M.Sc. Conservation Ecology); (Ph.D. Medical Bioscience) Ernest Pelsler (B.Sc. Zoology/Microbiology); (B.Sc. (Hons) Environmental Science); (M.Sc. Environmental Science)	
Cite this document as	Faul, A. Pelsler E. 2024. Updated Environmental Management Plan for the Operations of the Trans Caprivi Service Centre in Grootfontein	
Copyright	Copyright on this document is reserved. No part of this document may be utilised without the written permission of Geo Pollution Technologies (Pty) Ltd.	
Report Approval	 André Faul Conservation Ecologist	

Table of Contents

1	OBJECTIVES OF THE EMP	1
2	ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS	2
3	THE EMP	4
3.1	LAND USE, PLANNING, DESIGN, OPERATIONS – IDENTIFIED IMPACTS	4
3.2	LAND USE, PLANNING, DESIGN, OPERATIONS – MITIGATING MEASURES	5
3.3	MANAGEMENT AND IMPLEMENTATION OF THE EMP.....	5
4	THE IMPLEMENTATION OF THE EMP	7
5	CONCLUSIONS	20
6	REFERENCES	20

List of Tables

TABLE 2-1	NAMIBIAN LAW APPLICABLE TO THE FUEL RETAIL FACILITY	2
TABLE 2-2	RELEVANT MULTILATERAL ENVIRONMENTAL AGREEMENTS FOR NAMIBIA AND THE DEVELOPMENT	4
TABLE 2-3	STANDARDS OR CODES OF PRACTISE	4
TABLE 3-1	SPECIFIC IDENTIFIED ACTIONS AND RELATED RESPONSIBLE PARTY	5
TABLE 4-1	PLANNING FOR OPERATIONS, MAINTENANCE AND FUTURE DECOMMISSIONING OF THE PROJECT.....	8
TABLE 4-2	THE OPERATIONAL PHASE.....	10
TABLE 4-3	MAINTENANCE AND DECOMMISSIONING PHASES	16

List of Figures

FIGURE 1-1	PROJECT LOCATION.....	2
------------	-----------------------	---

1 OBJECTIVES OF THE EMP

TotalEnergies Marketing Namibia (Pty) Ltd (the Proponent) requires an updated environmental management plan (EMP) for their existing Trans Caprivi Service Centre in Grootfontein. The EMP provides management options to ensure potential impacts from operational activities are minimised. An EMP is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigation measures might be included if necessary. The EMP acts as a stand-alone document, which can be used during the operational phases as well as the decommissioning phases of any activity or development. All personnel taking part in the operations of this facility should be made aware of the contents of the EMP, so as to plan the relevant activities accordingly and in an environmentally sound manner.

The objectives of the EMP are:

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

TotalEnergies Marketing Namibia implements the International Standards of Operation (ISO) 14001 environmental management system (EMS) for its operations. An EMS is an internationally recognized and certified management system that 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 includes the following elements:

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

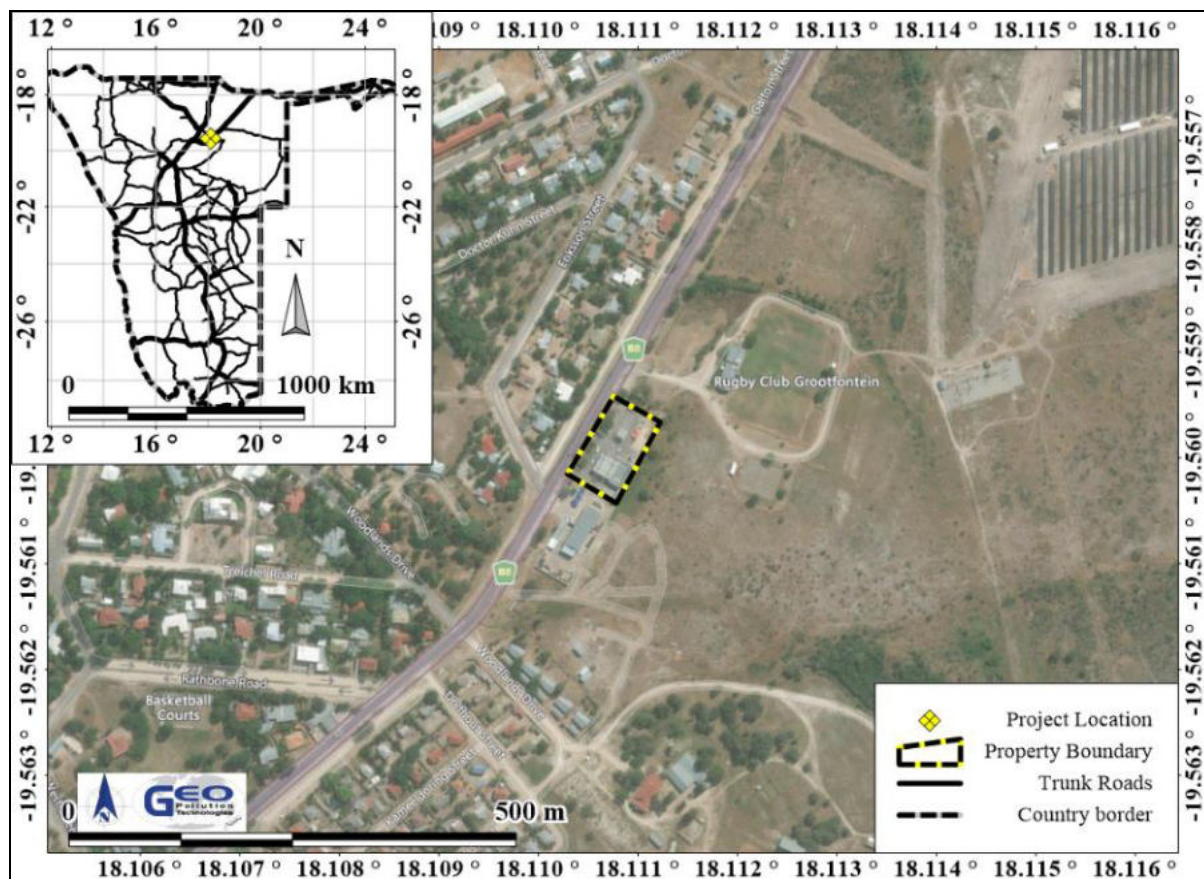


Figure 1-1 Project location

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	<ul style="list-style-type: none"> ◆ 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	<ul style="list-style-type: none"> ◆ 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 Government Notice No. 28-30 of 2012	<ul style="list-style-type: none"> ◆ Commencement of the Environmental Management Act ◆ List activities that requires an Environmental Clearance Certificate ◆ Provide Environmental Impact Assessment Regulations

Law	Key Aspects
Petroleum Products and Energy Act Act No. 13 of 1990, Government Notice No. 45 of 1990	<ul style="list-style-type: none"> ◆ Regulates petroleum industry ◆ Makes provision for impact assessment ◆ Petroleum Products Regulations (Government Notice No. 155 of 2000) <ul style="list-style-type: none"> ○ Prescribes South African National Standards (SANS) or equivalents for construction, operation and decommissioning of petroleum facilities (refer to Government Notice No. 21 of 2002)
Public and Environmental Health Act Act No. 1 of 2015, Government Notice No. 86 of 2015	<ul style="list-style-type: none"> ◆ 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.
Water Resources Management Act Act No. 11 of 2013	<ul style="list-style-type: none"> ◆ Provides for management, protection, development, use and conservation of water resources. ◆ Provides for licencing and permitting of boreholes, dams and abstraction of groundwater. ◆ Prevention of water pollution and assignment of liability.
Local Authorities Act Act No. 23 of 1992, Government Notice No. 116 of 1992	<ul style="list-style-type: none"> ◆ 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	<ul style="list-style-type: none"> ◆ 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	<ul style="list-style-type: none"> ◆ 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)
Atmospheric Pollution Prevention Ordinance Ordinance No. 11 of 1976	<ul style="list-style-type: none"> ◆ 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	<ul style="list-style-type: none"> ◆ 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)	<ul style="list-style-type: none"> ◆ 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 development

Agreement	Key Aspects
Stockholm Declaration on the Human Environment, Stockholm 1972.	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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"> 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 fuel retail 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 fuel retail facility store and handle 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 metres at any one location.” (The fuel retail facility store and handle more than 30 m³ of fuel.)
- 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 with petrol and diesel.)”

3 THE EMP

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 et al., 2014).

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

The following is the summary of the assessment of impacts:

- ◆ The surrounding properties are zoned for commercial use;
- ◆ The risk of an accident/incident causing fires or explosions is possible. Human factors are still being considered and the best engineering still goes in to maintaining a very safe facility. If a fire or explosion was to occur and the necessary engineered structures were not in place there could be a significant impact on the adjoining properties.
- ◆ The risk of groundwater, surface water and soil contamination is possible.

3.2 Land Use, Planning, Design, Operations – Mitigating Measures

The following is a summary of the proposed EMP, which will aim at reducing risk associated with the facility, taking into consideration all the risk perceptions raised by all stakeholders:

- ◆ To prevent product loss through ruptures of pipelines or hose during the offloading operations, all nozzles on road tankers and storage tanks are fitted with excess flow check valves. These are designed to allow only specific flow rates and the moment it exceeds this, the process is stopped. Small quantities lying in the hose that could leak would be captured by spill containment structures.
- ◆ Firefighting equipment and spill control / clean-up kits are present on site.
- ◆ The facility would not cause any substantial ecological threat to the environment in the vicinity of Grootfontein. Contamination of soils or groundwater is prevented through safe work practices, engineered safety devices and spill containment structures.

3.3 Management and Implementation of the EMP

Each business or project will have its own management structure tasked with the management and implementation of an EMP.

Successful implementation of an EMP is hinged on appointing key responsibilities and tasks to identified personnel. Members of staff may be assigned more than one position and carry the responsibility of more than one office. Therefore, for example, the environmental co-ordinator may also be the health and safety officer and / or community liaison officer. A list of key personnel as referred to in the documentation is as follows:

- ◆ Site Manager
- ◆ Financial Manager
- ◆ Procurement Manager
- ◆ Maintenance manager
- ◆ Environmental Coordinator
- ◆ Financial Manager
- ◆ Human Resource Manager
- ◆ Community Liaison Officer (CLO)
- ◆ Health & Safety Officer

Table 3-1 provides a list of actions which have been assigned to specific personnel as per the related EMP. The table should be completed with the relevant responsible parties by the Proponent.

Table 3-1 Specific identified actions and related responsible party

Responsible Party	Action Intervals	Action	Appointed Person
Site Manager	Ongoing	◆ Accountable and responsible for compliance and approval of any action plans.	
Financial Manager	Once-off	◆ Ensure budgetary allowance and/or insurance for any environmental incidents/damage (e.g. pollution clean-up due to fuel spills) or rehabilitation where infrastructure is removed.	
	Ongoing	◆ Financial provisions for employee development (training): ◆ Examples: ○ Educational and wellness programs	

		<p>(HIV/Aids, alcohol and drug abuse, financial advice, etc.).</p> <ul style="list-style-type: none"> ○ Fire protection and prevention training. ○ Health and safety plan / first aid training. ○ Communication strategy. 	
Procurement Manager	Ongoing	<ul style="list-style-type: none"> ◆ Ensure contractors' awareness and compliance to the Proponent's requirements for contractors on site and to applicable sections of this EMP. 	
Maintenance Manager	Ongoing	<ul style="list-style-type: none"> ◆ Draft necessary maintenance programs and information on utilities (location, capacity, etc.) 	
Compliance Manager	Ongoing	<ul style="list-style-type: none"> ◆ Drafting and maintenance of permitting, registration and licensing register, etc. 	
Human Resources Manger	Ongoing	<ul style="list-style-type: none"> ◆ Keep labour related documentation. ◆ Employment contracts. ◆ Local labour requirement. ◆ Unskilled labour requirement. ◆ Logging of work hours. ◆ Identification card. ◆ Provide references to employees. 	
Health and Safety Officer	Once-off	<ul style="list-style-type: none"> ◆ Compile a health and safety plan. 	
	Ongoing	<ul style="list-style-type: none"> ◆ Health and safety incidents register and related actions. ◆ Legal appointments. ◆ Safety training e.g. toolbox talks. 	
Community Liaison Officer	As required	<ul style="list-style-type: none"> ◆ Record communication to community members (of incidents of importance such as environmental incidents). ◆ Record consultation with the local and regional authorities. ◆ Record and respond to complaints from community members. 	
Environmental Coordinator	Once-off	<ul style="list-style-type: none"> ◆ Develop an environmental mitigation strategy / plan. ◆ Develop a disciplinary policy for non-compliance. 	
	Bi-annual report	<ul style="list-style-type: none"> ◆ Record of site inspections. ◆ Record of rehabilitation where required (dated photos of rehabilitated areas) 	
	As required	<ul style="list-style-type: none"> ◆ Environmental training of relevant staff on various aspects of environmental management (compliance to, and implementation, of the EMP) to be covered. Proof in the form of attendance registers kept on file. 	
	Ongoing	<ul style="list-style-type: none"> ◆ Recording of environmental performance and management. ◆ Recording of environmental incidents. Proof in the form of incidents register and communication to be kept on file. 	

4 THE IMPLEMENTATION OF THE EMP

Tables 4-1 to 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
- ◆ Maintenance and Decommissioning Phases

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 owner of the fuel retail facility and thus the **Proponent** is TotalEnergies Marketing Namibia while the site is managed by the **dealer**.

The tables below act as a guideline for the EMP to be established by the proponent/dealer. 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.

The EIA, EMP and Environmental Clearance Certificate must be communicated to the site operator and his site manager. All monitoring results must be reported on as indicated. These are important for any future renewals of the environmental clearance certificate and must be submitted to the Ministry of Environment, Forestry and Tourism on a bi-annual basis. This is a requirement by the Ministry.

Table 4-1 Planning for operations, maintenance and future decommissioning of the project

Activity	Objective	Action	Timing	Proof of Compliance	Responsible Body
Compliance	To comply with all legal requirements for the operations of the facility in Namibia.	Apply for / renew the necessary permits from the various ministries, local authorities and any other bodies that governs the operations of the activity. Have environmental clearance certificate and petroleum products licence available on site. Finalise negotiations and resolve any outstanding issues, if any, over the allocation of user rights and zoning of the property on which the activity will be located.	Immediately after environmental clearance certificate is issued	All contracts, permits, certificates and other legal documents on file.	Proponent
Appointments	To appoint reputable contractors and operational personnel and establish the EMP, a legal requirement that forms part of the contract with the contractor and employees.	Appoint a contractor and employees and enter into an agreement which includes the EMP. Ensure that the contents of the EMP are understood by the contractor, sub-contractors, employees and all personnel who will be present on site.	Immediately after environmental clearance certificate is issued	Contracts on file	Proponent and Dealer
Management	Establish a management system to implement and monitor Health, Safety and Environment.	Make provisions to have a Health, Safety and Environmental Coordinator to implement the EMP and oversee occupational health and safety as well as general environmental related compliance at the site. Allocate the responsibility of liaison officer to a dedicated staff member who will be responsible for dealing with complaints and communication with neighbours and other potentially impacted parties (when required). Have the following emergency plans, equipment and personnel in place to deal with all emergencies:	Immediately after environmental clearance certificate is issued and during operations, maintenance and decommissioning.	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 and Dealer

Activity	Objective	Action	Timing	Proof of Compliance	Responsible Body
		<p>Risk Management / Mitigation / Environmental Management Plan/ Emergency Response Plan and HSE Manuals</p> <p>Adequate protection and indemnity insurance cover for incidents;</p> <p>Comply with the provisions of all relevant safety standards;</p> <p>Procedures, equipment and materials required for emergencies.</p>			
Restoration Fund/Insurance	To establish a fund/insurance for future environmental restoration or pollution remediation if ever required.	To establish a fund for future ecological restoration of the project site should project activities cease and the site is decommissioned and/or when environmental restoration or pollution remediation is required.	Immediately after environmental clearance certificate is issued and during operations	Financial statements/proof of restoration fund/insurance	Proponent and Dealer
Reporting	To establish a reporting system to report on monitoring aspects of operations, maintenance and decommissioning as outlined in the EMP.	<p>Establish a reporting system to report on aspects of operations, maintenance and decommissioning as outlined in the EMP.</p> <p>Submit monitoring reports to the Ministry of Environment, Forestry and Tourism on a bi-annual basis.</p>	During operations as well as possible future maintenance or decommissioning of the development	Six monthly monitoring reports	Proponent and Dealer; Contractor
Environmental Clearance Renewal	To renew the environmental clearance certificate every three years.	Appoint a specialist environmental consultant to update the EIA and/or 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
Enhanced skills and technology transfer to Grootfontein / Otjozondjupa Region and subsequent promotion of economic development	People need skills to perform their jobs. The technology to do something is often not found locally. Development of people and technology are key to economic development.	Training must be provided to local Namibians to ultimately employ a predominantly Namibian workforce. Deviations from this practice must be justified appropriately.	Proof of appointment of local Namibians on file.	Proponent and Dealer
Increased spread of HIV/ AIDS	New and existing developments attract people who seek work. The trucking and distribution of fuel to and from Grootfontein could contribute to the spread of HIV / AIDS.	Implementing educational program on HIV/AIDS for all the staff is imperative. Restricted employment for local people only should be practiced. Deviations from this practice should be justified appropriately.	Proof of appointment of local Namibians on file. Proof of training and educational programmes.	Dealer
Employment	The facility provides employment to locals.	Training must be provided to local Namibians to ultimately employ a predominantly Namibian workforce. Deviations from this practice must be justified appropriately.	Six monthly summary report based on employee records.	Dealer
Secure Fuel Supply	The operation of the facility will aid in securing fuel supply to the residents of Grootfontein, the local industries and tourist sector.	None required	None required	N/A
Traffic	Traffic impacts especially during periods of fuel delivery and during peak holiday season.	Tanker trucks delivering fuel should not be allowed to obstruct any traffic in Okavango Avenue or surrounding streets. If any traffic impacts is expected, preventative traffic management should be performed. The placement of signs to warn and direct traffic will mitigate traffic impacts. During peak holiday season extra pump attendants should be on site to ensure efficient and fast fuel delivery.	Any complaints received regarding traffic issues should be recorded together with action taken to prevent impacts from repeating itself. A report should be compiled every six months of all incidents reported, complaints received, and action taken.	Dealer

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Health, Safety & Security	<p>Health risks include:</p> <ul style="list-style-type: none"> ◆ Breathing in excessive fumes ◆ Slipping on wet surfaces ◆ Product contact with eyes and skin ◆ Carcinogenic effects of some petroleum products ◆ Accidents involving vehicles <p>Security risks are related to unauthorized entry, theft and sabotage.</p>	<p>It is imperative that adequate measures must be brought in place to ensure safety of staff on site at all times.</p> <p>An integrated health and safety management system acts as a monitoring tool and mitigating tool. Typical mitigating measures within the health and safety management systems are:-</p> <ul style="list-style-type: none"> ◆ Operational and procedural manuals ◆ Health and safety training ◆ Housekeeping rules ◆ Colour coding areas, pipes, equipment and substances ◆ Signage for Personal Protective Equipment (e.g. protective clothing like safety boots and hard hats) ◆ Safe work procedures and permits to work ◆ Clearance certificates for confined spaces ◆ Emergency response plans ◆ Material Safety Data Sheets (MSDS) ◆ First aid treatment and training ◆ Medical procedures and emergency services ◆ Daily safety moments and/or drills <p>The MSDS give health related medical responses for personnel assisting staff who are exposed to the fuels.</p> <p>Security procedures and proper security measures must be in place. Strict security that prevents unauthorised entry and security personnel should be utilised.</p>	<p>Inventory of necessary information and administrative documentation to be kept on a weekly basis.</p> <p>A report should be compiled every six months 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 and Dealer
Noise	Noise pollution will exist due to heavy and light motor vehicles accessing the site to offload fuel or refuel.	The site is situated within a commercial area and it is important to refer and adhere to the Health and Safety Regulations of the Labour Act and World Health Organisation regulations pertaining to noise (Guidelines for Community Noise, 1999).	<p>Any complaints received regarding excessive noise should be recorded with notes on action taken.</p> <p>All complaints and additional data, if available, to be compiled in a report every six months.</p>	Proponent and Dealer

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Fire Hazards	Products kept on site are flammable and therefore a fire risk exists.	<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"> ◆ Storage according to Material Safety Data Sheet and SANS instructions ◆ Site inspection and maintenance ◆ Operational procedures and training ◆ Mechanical and electrical inspections ◆ Fire extinguishers ◆ Trained personnel ◆ Good housekeeping ◆ Reporting of leaks/spills <p><i>Fire Fighting and Fire Prevention:</i></p> <p>All fire precautions and fire control at the site must be in accordance with relevant SANS regulations or better. Firefighting measures as per the Material Safety Data Sheets of the products should be adhered to.</p> <p>In addition to this, all personnel have to be sensitised about responsible fire protection measures and good housekeeping such as the removal of flammable materials including rubbish and dry vegetation. Regular inspections should be carried out to check for these materials at the site. A holistic fire protection and prevention plan is needed. This plan must include an emergency response plan, firefighting plan and spill recovery plan.</p> <p>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. An integrated fire prevention plan should be drafted. Special note must be taken of the regulations stipulated in sections 47 and 48 of the Petroleum Products and Energy Act, 1990 (Act No. 13 of 1990).</p>	A report should be compiled every six months of all incidents reported. The report should contain dates when fire drills were conducted and when fire equipment was tested/serviced.	Proponent and Dealer

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Waste Production	The ability of a product to act as waste which must be cleaned up. These can be soils that become contaminated with fuel. Domestic waste from bins, offices and ablution facilities. Contamination of fuel through accidental mixing of products results in waste.	<p>See the MSDS for handling hazardous substances. Contaminated fuel products that can no longer be used in the market must be disposed of in the hazardous waste section of a municipal dump or where possible converted for beneficial use.</p> <p>All other domestic waste should be disposed of timeously to maintain visual orderliness, but more so to not give time for liquid waste to enter the soil substrate.</p> <p>Contaminated soils can be remediated in accordance with accepted procedures at a site dedicated for this purpose.</p> <p>The spill catchment traps and oil water separator should be cleaned regularly and waste disposed of at a suitably classified hazardous waste disposal facility. Surfactants (soap) may not be allowed to enter the oil water separator.</p> <p>Liaise with the municipality regarding waste and handling of hazardous waste.</p>	<p>A register of hazardous waste disposal should be kept. This should include type of waste, volume as well as disposal method/facility.</p> <p>Any complaints received regarding waste should be recorded with notes on action taken.</p> <p>All data to be compiled in a six month report.</p>	Proponent and Dealer
Groundwater, Surface Water and Soil Contamination	Porous surface substrate can allow unwanted hazardous and ecologically detrimental substances to seep down to the water table.	<p>The following measures must be employed to prevent spillage into surface water drainage channels and groundwater sources:-</p> <ul style="list-style-type: none"> ◆ Spill control structures and procedures must be in place according to SANS standards or better and connection of all surfaces where fuel is handled with an oil water separator. ◆ All fuelling should be conducted on surfaces provided for this purpose. E.g. Concrete slabs with regularly maintained seals between slabs. ◆ The procedures followed to prevent environmental damage during service and maintenance, and compliance with these procedures, including the correct use of sumps and regular reporting of spillages must be audited and corrections made where necessary. ◆ Proper training of operators must be conducted on a regular basis. ◆ Any spillage of more than 200 l must be reported to the relevant authorities and remediation instituted. ◆ Spill clean-up means must be available on site as per 	<p>A report should be compiled every six months of all spills or leakages reported. The report should contain the following information:</p> <ul style="list-style-type: none"> ◆ date and duration of spill ◆ product spilled ◆ volume of spill ◆ remedial action taken ◆ comparison of pre-exposure baseline data (previous pollution conditions survey results) with post remediation data (e.g. soil hydrocarbon concentrations) ◆ copy of documentation 	Proponent and Dealer; Independent Specialist Consultant

Criteria	Nature	Mitigation	Monitoring	Responsible Body
		<p>the relevant MSDS.</p> <ul style="list-style-type: none"> Surfactants (soap) may not be allowed to enter the oil water separator as this will reduce or stop its effectiveness. 	<p>in which spill was reported to Ministry of Mines and Energy</p>	
Ecological Impact	Being in an urban area this impact is mostly limited to pollution of the environment.	Mitigation measures to prevent pollution as above to be implemented.	<p>Any complaints received regarding waste, pollution or environmental damage should be recorded with notes on action taken.</p> <p>A report should be compiled every six months of all complaints reported.</p>	Dealer
Visual Impact	This is an impact that not only affects the aesthetic appearance, but also the integrity of the site	Regular waste disposal and routine maintenance on infrastructure will ensure that the longevity of structures is maximised and a low visual impact is maintained. However, it is important that the real integrity of the structures is considered in the long term and not just appearances.	<p>A report should be compiled every six months of all complaints reported.</p>	Dealer

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Cumulative Impact	<p>These are impacts on the environment, which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of who undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. In relation to an activity, it means the impact of an activity that in itself may not be significant, may become significant when added to the existing and potential impacts resulting from similar or diverse activities or undertakings in the area.</p> <p>Possible cumulative impacts associated with the operational phase include: increased risk of groundwater and soil contamination; increased traffic in the area will have a cumulative impact on traffic flow on Okavango Avenue and surrounding streets; increased risk of accidents.</p>	<p>Addressing each of the individual impacts as discussed and recommended in the EMP would reduce the cumulative impact.</p> <p>Reviewing six monthly reports for any new or re-occurring impacts or problems would aid in identifying cumulative impacts and help in planning if the existing mitigations are insufficient.</p>	<p>Six monthly 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 Maintenance and decommissioning phases

Criteria	Nature	Mitigation	Monitoring	Responsible Body
Waste Production	<p>When performing maintenance or upon decommissioning waste will be produced in the form of building rubble, obsolete equipment and structures, obsolete or residual products and equipment or structures that can be used elsewhere or sold as scrap.</p> <p>Soil polluted by hydrocarbons must be treated as hazardous waste.</p>	<p>To reduce the amount of waste all re-usable pipelines, pumps, tanks, valves and other equipment must be removed to another site owned by the proponent or sold.</p> <p>Those items that can not be used again must be scrapped in the appropriate manner. By law storage tanks may not be sold, but must be scrapped by approved recyclers.</p> <p>Upon maintenance or demolition of the buildings any waste, concrete and rubble must be removed from the property and taken to an approved dumpsite designated by the Grootfontein 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
Ecological Impact	<p>Operations spanning many years may create new habitat for fauna and flora. Upon maintenance or decommissioning these habitats may be destroyed.</p>	<p>The proponent would have to ensure that no new habitat is created for flora and fauna. Before decommissioning the health, safety and environmental officer 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 the Ministry of Environment, Forestry and Tourism 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 the Ministry of Environment, Forestry and Tourism in order to determine the appropriate handling of the situation.</p>	<p>A report should be compiled of any fauna and flora that established itself on the premises. The report should include all actions taken to relocate or deal with the situation.</p>	Proponent; Contractor
Employment	<p>Maintenance will require contractors.</p> <p>Decommissioning of the facility may</p>	<p>Restricted employment of local people and contractors only should be practiced. Deviations from this practice</p>	<p>Employment contracts on file.</p>	Proponent

Criteria	Nature	Mitigation	Monitoring	Responsible Body
	lead to retrenchments or re-location of staff no longer required.	<p>should be justified appropriately.</p> <p>Plan in advance for meeting the Labour Acts requirements for retrenching of staff if required.</p> <p>Where possible staff can be relocated to another facility or town where business continues in the same way.</p>	During normal operations of the facility an six monthly report must be compiled that includes the appropriate plans for handling of employees should the facility be decommissioned. The report should include budgeting for retrenchments and possible alternative positions elsewhere.	
Dust	Dust may be generated during maintenance and decommissioning phases and might be aggravated during periods of strong winds.	<p>It is recommended that regular dust suppression be included in the maintenance and decommissioning phases, when dust becomes an issue.</p> <p>Personnel should be issued with dust masks for health and safety reasons.</p>	<p>Regular visual inspection.</p> <p>A complaints register must be maintained, in which any complaints from the community must be logged. Complaints must be investigated and, if appropriate, acted upon.</p>	Proponent; Contractor
Noise	Noise pollution will exist due to heavy vehicles accessing the site during maintenance or to collect rubble from demolished building materials. Cranes may be erected for removing the huge storage tanks. Hammers, diggers and drills will be used.	<p>The site is situated within a commercial area and it is important to refer and adhere to the Health and Safety Regulations of the Labour Act and World Health Organisation regulations pertaining to noise (Guidelines for Community Noise, 1999).</p> <p>All personnel must be issued with hearing protectors and neighbours must be notified of the time and duration of maintenance or decommissioning. Notice of the start of major maintenance activities or decommissioning should be given to the local authorities with an invitation to give feedback at any time with regards the noise impact.</p>	A complaints register must be maintained, in which any complaints from the community must be logged. Complaints must be investigated and, if appropriate, acted upon.	Proponent; Public Relations Personnel; Contractor.
Visual Impact	This is an impact that affects the aesthetic appearance	Visual impact could pose one of the most significant impacts. Visual impacts could be limited through keeping all maintenance and decommissioned areas clean and orderly at all times. Good housekeeping also	A complaints register must be maintained, in which any complaints from the community must	Proponent; Contractor

Criteria	Nature	Mitigation	Monitoring	Responsible Body
		reduces the risk of injuries. Notice of the start of the major maintenance activities or decommissioning should be given to the local authorities with an invitation to give feedback at any time with regards the visual impact.	be logged. Complaints must be investigated and, if appropriate, acted upon.	
Groundwater, Surface Water and Soil Contamination	Porous surface substrate can allow unwanted hazardous and ecologically detrimental substances to seep down to the water table.	<p>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, sewerage system). Pollutants in the soil and building rubble must be transported away from the site to an approved, appropriately classified waste disposal site.</p> <p>Confirm MSDS information for any remaining fuels, oils or lubricants that must be discarded.</p> <p>Regulations on sewerage discharge and the chemicals that may and may not be put into the sewerage system must be followed.</p>	<p>Report form for all spills or leaks is to be completed by Contractor and submitted to the Grootfontein Municipality environmental division and/or Ministry of Mines and Energy.</p> <p>A baseline study must be carried out after the decommissioning. This is to assess the condition of soil substrate and any groundwater present. Comparisons with previous conditions survey data is to be made and any discrepancies must be addressed before the site can be signed over.</p>	Proponent; Contractor
Health, Safety and Security	<p>During the maintenance and decommissioning phase similar risks to human beings as with the operational phase will be present.</p> <p>Once the tanks and pipelines have been emptied completely of their contents residual amounts of fuel might exist.</p> <p>All other risks associated with demolitions must be considered.</p>	<p>The maintenance and decommissioning of a fuel retail facility can cause serious health and safety risks to workers on site. Occupational exposures are normally related to dermal contact with fuels and inhalation of fuel vapours during handling of such products. For this reason adequate measures must be brought in place to ensure safety of staff on site, and includes: (Provide forms for all end users who monitor)</p> <ul style="list-style-type: none"> ◆ Proper training of operators; ◆ First aid treatment; ◆ Medical assistance; ◆ Emergency treatment; 	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 it self.	Proponent; Contractor

Criteria	Nature	Mitigation	Monitoring	Responsible Body
		<ul style="list-style-type: none"> ◆ Prevention of inhalation of fumes (fuel); ◆ Protective clothing, footwear, gloves and belts; safety goggles and shields; ◆ Manuals and training regarding the correct handling of materials and packages should be in place and updated as new or updated MSDS' become available; Risks might be lower but still exist especially if tanks must be entered for inspections. Confined Space Training will be required. ◆ 24-hour security surveillance in case of opportunistic activities. 		
Fire and Explosion Hazard	Residual hydrocarbons could be present and might pose a risk to the teams doing maintenance or 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 addition to this, all personnel have to be sensitised about responsible fire protection measures and good housekeeping such as the removal of flammable materials including rubbish, dry vegetation, and hydrocarbon-soaked soil from the vicinity of the fuel storage facility. Regular inspections should still be carried out to inspect and test fire fighting equipment and pollution control materials at the fuel storage facility. All fire precautions and fire control at the fuel storage facility must be in accordance with SANS, or better. The holistic fire protection and prevention plan should still be utilised. Experience has shown that the best chance to rapidly put out a major fire is in the first 5 minutes. It is important to recognise that a responsive fire prevention plan does not solely include the availability of fire fighting equipment, but more importantly, it involves premeditated measures and activities to timeously prevent, curb and avoid conditions that may result in fires.	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 it self.	Proponent; Contractor

5 CONCLUSIONS

The above EMP, 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 stage of project, it needs to be reviewed throughout all phases.

The EMP should be used as an on-site reference document during all phases of the project, and auditing should take place in order to determine compliance with the EMP for the 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 to the Ministry of Environment, Forestry and Tourism every six months to allow for the future renewal of the Environmental Clearance Certificate.

6 REFERENCES

Botha P, Faul A, Hooks P; 2013 October; Environmental Impact Assessment for the Trans Caprivi Service Centre Petroleum Retail Facility in Grootfontein