

**ENVIRONMENTAL MANAGEMENT PLAN FOR THE  
DEVELOPMENT OF A FUEL RETAIL FACILITY -  
SANGWALI, ZAMBEZI REGION**

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# 1. INTRODUCTION

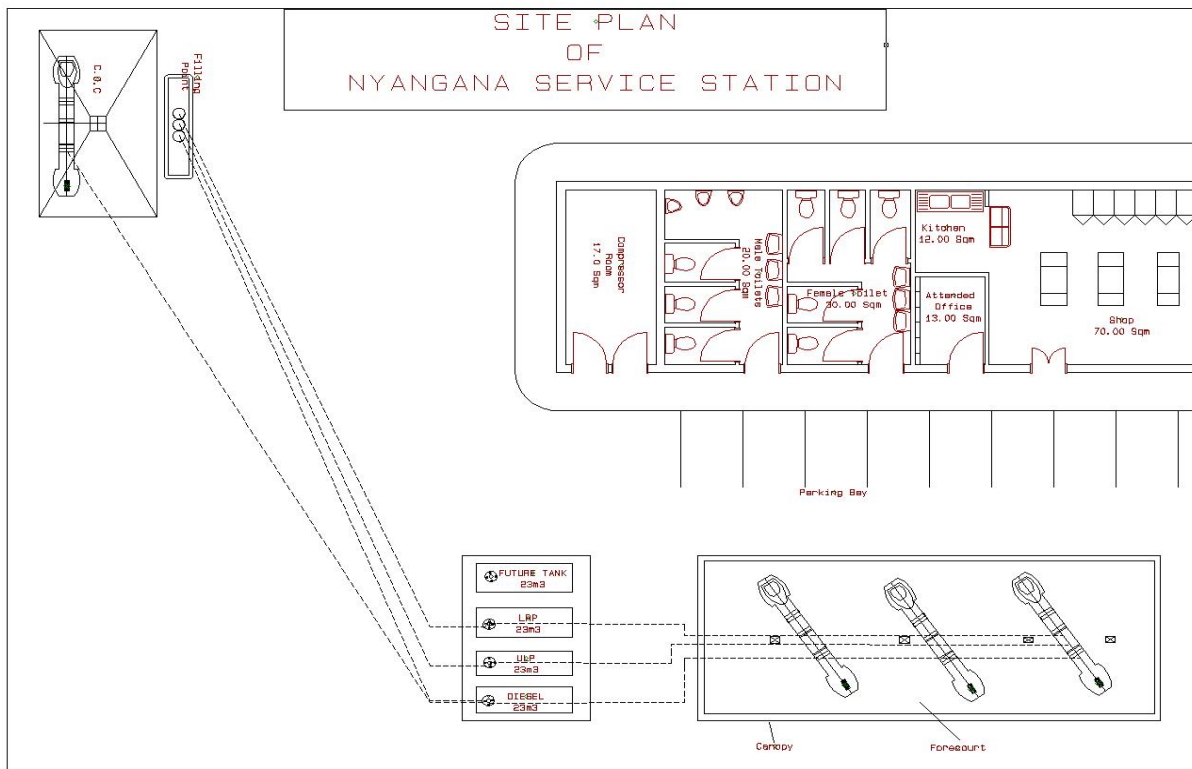
Mr. Mushitu Mukwame of Sangwali Village appointed CNM Environmental Consulting Services cc to carry out an Environmental Impact Assessment (EIA) for the development of a fuel retail facility in the Sangwali area. The intended project's location is S-18.238190; E23.660616 along the B8 road – The Trans-Caprivi Highway – see Figure 1 below.



**Figure 1. Location of the proposed development site at Sanwali (source: Google Earth)**

The operations of the fuel retail facility will include:

- Filling of the storage tanks from road transport tankers;
- Dispatching of fuel to customers;
- Tank dips and fuel volume reconciliation;
- General operational activities and maintenance procedures associated with a fuel retail facility.



**Figure 2. Layout of the proposed development**

An environmental impact assessment was carried out to determine the potential impacts that will be triggered by the intended project in all its three phases of development – (i) construction phase; (ii) operational phase; and the (iii) decommissioning phase. This was carried out to apply for an Environmental Clearance Certificate (ECC) from the Ministry of Environment & Tourism’s Directorate of Environmental Affairs (DEA) in compliance with Namibia’s Environmental Management Act (No. 7 of 2007).

## **2. OBJECTIVES OF THE ENVIRONMENTAL MANAGEMENT PLAN**

The operation of a fuel retail station requires an EIA and an EMP for the operations to be carried out. An EMP is a document that provides management options to ensure that impacts from operational activities are minimised. It 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 phase of any proposed activity or development. All contractors and sub-contractors 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 in an environmentally sound manner.

The objectives of the EMP are:

- to include all components of the various activities;
- to prescribe the best practicable control methods to lessen the environmental impacts associated with 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.

### **3. 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 Impact Assessment, as per the Namibian legislation. The legislation and standards provided govern the environmental assessment process. The following environmental legislations are relevant to the development of the fuel retail facility:

#### **(i) The Namibian Constitution**

The constitution of the Republic of Namibia states that the state shall actively promote and maintain the welfare of the people by adopting policies aimed at the management of ecosystems, essential ecological processes and biological diversity of Namibia for the benefit of all Namibians, both present and future.

#### **(ii) Hazardous Substances Ordinance (No. 14 of 1974)**

This ordinance applies to the manufacture, sale, use, disposal and dumping of hazardous substances, as well as their import and export. Its primary purpose is to prevent hazardous substances from causing injury, ill-health or the death of human beings. This is administered by the Ministry of Health & Social Services.

#### **(iii) Atmospheric Pollution Prevention Ordinance (No. 11 of 1976)**

This ordinance governs the control of noxious or offensive gasses. It prohibits anyone from carrying a scheduled process without a registration certificate in a controlled area. A certificate must be issued if it can be demonstrated that the best practical means are being adopted for preventing or reducing the escape into the atmosphere of noxious or offensive gasses produced by the scheduled process. The best practice would be to notify the line ministry (Ministry of Health & Social Services) but it is not a legal requirement.

**(iv) Petroleum Products and Energy Act (No. 13 of 1990,  
Government Notice No. 45 of 1990)**

This Act regulates the petroleum industry. It makes provision for impact assessment. The Petroleum Products Regulations (Government Notice No. 155 of 2000) prescribes South African National Standards (SANS) or equivalents for the construction, operation and decommissioning of petroleum facilities (refer to Government Notice No. 21 of 2002).

The SANS 10089-3: 2010 is specifically aimed at the storage and distribution of petroleum products at fuel retail facilities and consumer installations. It provides requirements for spill control infrastructure.

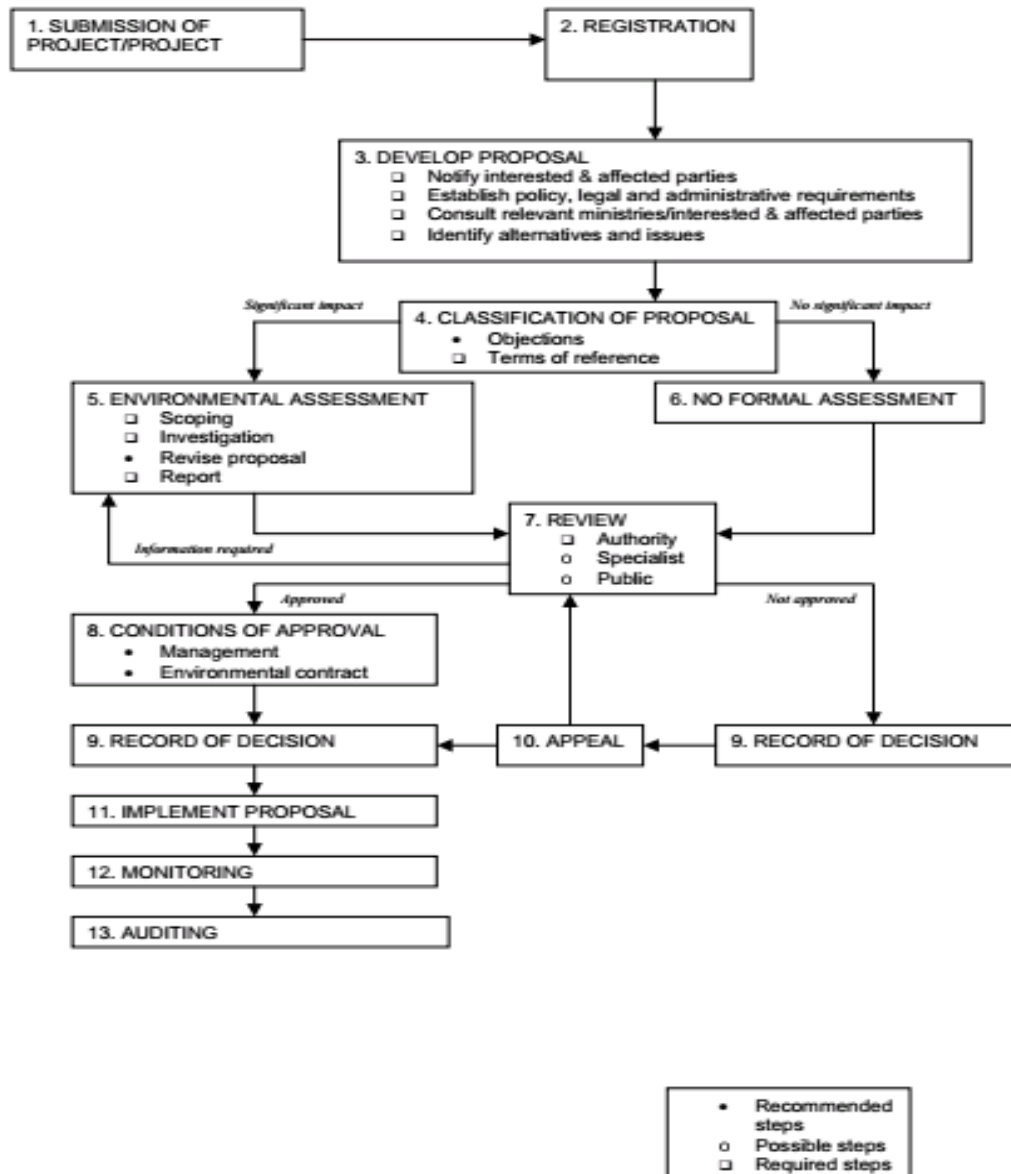
**(v) Local Authorities Act (No. 23 of 1992, Government Notice No.  
116 of 1992)**

This Act defines the powers, duties and functions of local authority councils. It also regulates discharges into sewers.

**(vi) Environmental Assessment Policy of Namibia (1995)**

Environmental Assessments (EAs) seek to ensure that the environmental consequences of development projects and policies are considered, understood and incorporated into the planning process, and that the term “environment” (in the context of IEM and EAs) is broadly interpreted to include biophysical, social, economic, cultural, historical and political components.

All listed policies, programmes and projects, whether initiated by the government or the private sector, should be subjected to the established EA procedures.



**Figure 3. Environmental Assessment Procedure**

Apart from the requirements of the Environmental Assessment Policy, the following sustainability principles need to be taken into consideration, particularly to achieve proper waste management and pollution control:

- **Cradle to Grave Responsibility**

The principle provides that those who manufacture potentially harmful products should be held liable for their safe production, use and disposal and that those who initiate potentially polluting activities should be held liable for their commissioning, operation and decommissioning.



- **Precautionary Principle**

There are numerous versions of the precautionary principle. At its simplest, it provides that if there is any doubt about the effects of a potentially polluting activity, a cautious approach should be adopted.

- **The Polluter Pays Principle**

A person who generates waste or causes pollution should, in theory, pay the full costs of its treatment or of the harm, which it causes to the environment.

- **Public Participation and Access to Information**

In the context of environmental management, citizens should have access to information and the right to participate in decision making.

**(vii) Environmental Management Act (No. 7 of 2007, Government Notice No. 232 of 2007)**

This Act defines the term “environment” as an interconnected system of natural and human-made elements such as land, water and air; all living organisms and matter arising from nature, cultural, historical, artistic, economic and social heritage and values. It provides a list of projects which require environmental assessments. It aims to promote the sustainable management of the environment and the use of natural resources and to provide for a process of assessment and control of activities which may have significant effects on the environment, and to provide for incidental matters.

The Environmental Management Act has three main purposes:

- To make sure that people consider the impact of activities on the environment carefully and in good time;
- To make sure that all Interested & Affected Parties have a chance to participate in environmental assessments;
- To make sure that the findings of environmental assessments are considered before any decisions are made about activities which might affect the environment.

**(viii) Labour Act (No. 11 of 2007, Government Notice No. 236 of 2007)**

This Act provides for Labour Law and the protection and safety of employees. The Labour Act, 1992: Regulations relating to the health and safety of employees at work (Government Notice No. 156 of 1997).

**(ix) Environmental Management Act Regulations (Notice No. 28-30 of 2012)**

The regulations mark the commencement of the Environmental Management Act. They list the activities that cannot be carried out without conducting an Environmental Impact Assessment to obtain an Environmental Clearance Certificate. They also provide Environmental Impact Assessment regulations.

**(x) Water Resources Management Act (2004)**

This Act repealed the existing South African Water Act No. 54 of 1956 which was used by Namibia. This Act ensures that Namibia's water resources are managed, developed, protected, conserved and used in ways which are consistent with fundamental principles depicted in Section 3 of this Act. Part IX regulates the control and protection of groundwater resources. Part XI, titled Water Pollution Control, regulates the discharge of effluent by permit.

**(xi) Water Resources Management of Namibia (No. 11 of 2013)**

This Act provides for the management, protection, development, use and conservation of water resources. Although it is not in force yet, it also makes provision for the prevention of water pollution and assignment of liability.

**(xii) Public and Environmental Health Act (No. 1 of 2015, Government Notice No. 86 of 2015)**

This Act provides a framework for a structured more uniform public and environmental health system, and for incidental matters. It deals with Integrated Waste Management including waste collection, disposal and recycling; waste generation and storage; and sanitation.

**(xiii) Pollution Control and Waste Management Bill (Draft)**

The proposed development of a fuel retail facility in Sangwali only applies to parts 2, 7 and 8 of the bill.

**Part 2** states that no person shall discharge or cause to be discharged any pollutant to the air from a process except under and in accordance with the provisions of an air pollution license issued under Section 23. It further provides for procedures to be followed in license application, fees to be paid and required terms of conditions for air pollution licenses.

**Part 7** states that any person who sells, stores, transports or uses any hazardous substances or products containing hazardous substances shall notify the competent authority, in accordance with sub-section (2), of the presence and quantity of those substances.

**Part 8** calls for emergency preparedness by the person handling hazardous substances, through emergency response plans.

## **4. THE ENVIRONMENTAL MANAGEMENT PLAN**

### **4.1 Responsibilities for environmental management**

The proponent will be responsible for environmental control on-site during the construction and operational phase. It is vital to have a pre-construction briefing meeting to reach an agreement on specific roles or various parties and penalties for non-compliance.

### **4.2 Training and induction**

The proponent will be responsible for ensuring that environmental awareness education of all employees and contractors is done satisfactorily. The facility management should ensure that employees and contractors are made aware of the project's environmental requirements.

The EMP should form part of the Terms of Reference for all contractors, sub-contractors and suppliers. All contractors, sub-contractors and suppliers will have to sign an agreement to assure that they understood the EMP and will comply. All senior staff should familiarise themselves with the entire contents of the EMP and its implications.

### **4.3 Environmental incident reporting**

All environmental incidents occurring at the proposed site will be recorded. The incident report will have to include time, date, location and nature of the incident, extent of the incident, actions taken, and personnel involved.

### **4.4 Environmental monitoring**

Periodic environmental monitoring must be taken on a regular basis. Monitoring should be done in order to ensure compliance with all aspects of the EMP. Findings should be liaised with to all responsible officers as chain command.

### **4.5 EMP administration**

Copies of this EMP shall be kept at the site office and should be distributed to all senior staff members, including those of the contractors.

### **4.6 EMP amendments**

The EMP amendments can only be made with the approval of the DEA. Amendments to the EMP should be liaised to all employees and contractors.

### **4.7 Non-compliance of the EMP**

Problems may occur in carrying out mitigation measures or monitoring procedures that could result in non-compliance of the EMP. The responsible personnel should encourage staff to comply with the EMP, and address acts of non-compliance and penalties.

#### **4.8 Environmental Control Officer**

The Environmental Control Officer for the site can be an independent environmental consultant (e.g. CNM Environmental Consulting Services) appointed by the proponent to monitor and review the on-site environmental management and implementation of this EMP.

#### **4.9 Site management**

Areas outside this designated working zone shall be considered “no-go” areas. The offloading zones must be clearly demarcated when offloading goods to enhance safety around the proposed development.

##### **(i) Traffic management**

Passenger vehicles and roads transport trucks will access the proposed fuel retail facility through a road that will be constructed at the facility. Work sites shall be clearly demarcated and road signs will be erected. The general public should not have access to the work sites during construction.

##### **(ii) Fire and safety management**

The electrical wiring at the facility will have to be approved by a qualified electrician who will issue a Certificate of Compliance for these buildings prior to occupation.

Hydrocarbons are volatile under certain conditions and their vapours in specific concentrations are flammable. If precautions are not taken to prevent their ignition, fire and subsequent safety risks may arise.

No fire, whether for cooking or for any other purpose, is to be made at the fuel retail facility during any of the three phases (construction; operational and decommissioning). The Contractor shall take all reasonable measures and active steps to avoid increasing the risk of fire through activities on site and prevent the accidental occurrence or spread of fire; and shall ensure that there is sufficient fire-fighting equipment on site at all times. This equipment shall include fire extinguishers. The Contractor should be prepared for such events.

The management of the service station together with the contractors shall take all reasonable measures to avoid increasing the risk of fire and shall ensure that there is sufficient fire-fighting equipment on site at all times.

##### **(iii) Staff management**

The Contractor must ensure that their employees have suitable personal protective equipment and must be properly trained in fire fighting and first aid.

**(iv) Waste management**

The developer shall remove all waste off-site to designated waste disposal sites. There should be a sufficient number of dust bins or containers on the site to store any solid or liquid waste produced, and these should be provided by the proponent/franchisee.

**(v) Cement and concrete batching**

Concrete mixing directly on the ground shall not be allowed and shall take place on an impermeable surface. All run-off from batching areas shall be strictly controlled, and cement contaminated water shall be collected, stored and disposed-off at a licensed suitable waste disposal facility.

**(vi) Spillages and leakages**

If any spillage occurs, contaminated soil shall be collected in a holding tray or drum and which will then be disposed-off at a licensed hazardous waste site. Any spillage of more than 200 litres must be reported to the Ministry of Mines & Energy as per the Petroleum Products Act.

**(vii) Flood management**

The fuel retail facility will be designed in a way that it can withstand flood. Storm water management of the site should be a key aspect of flood management on site. All culverts should be kept clean to allow storm water to flow freely.

**Table 1. Groundwater**

| <b>Construction/Decommissioning phase</b> |  |
|---|--|
| <b>Description</b>                        | <p>Groundwater contamination can be caused by leakages and spills of petroleum products (i.e. oil leakages, hydrocarbon fuel, lubricants and grease) from machinery and heavy-duty vehicles during construction and decommissioning phases. Care must be taken to avoid the contamination of soil and groundwater.</p> <p>Temporary toilet facilities should be installed at the construction site and at the camping site or alternative arrangements must be made. The contractor shall ensure that there is no spillage when the toilets are cleaned or during normal operation and that the contents are properly removed from site.</p> |
| <b>Proposed Mitigating Measures</b>       | Prevent spillages of any petroleum products and chemicals. Use drip trays when doing maintenance on machinery. Maintenance should be done on dedicated areas with linings or concrete floor.   |
| <b>Proposed Monitoring</b>                | Regular visual inspection.   |
| <b>Responsible party</b>                  | Contractor.  |
| <b>Operational phase</b>                  |  |
| <b>Description</b>                        | <p>Groundwater quality could be impacted through leachate of oil leakages, hydrocarbon fuel, lubricants and grease from vehicles frequenting the facility. Spillages may also occur during fuel delivery and loading of road transport tanker trucks. Care must be taken to avoid the contamination of soil and groundwater.</p> <p>Run-off from overflowing and/or leaking onsite sewage systems may transport the effluent to groundwater.</p>   |
| <b>Proposed Mitigation Measures</b>       | All operational surfaces and fuel storage facilities must be installed with spill containment areas as per the relevant SANS standards or better. Special emphasis is placed on SANA 10089:1999, SANS 100131:1977,   |

|                            |   |
|----------------------------|---|
|                            | <p>SANS 100131:1979, SANS 100131:1982, SANS 100131:1999. The risk can be lowered further through proper training of staff. All spills must be cleaned up immediately.</p> <p>The presence of an emergency response plan and suitable equipment is advised, so as to react to any spillage or leakages properly and efficiently.</p> |
| <b>Proposed Monitoring</b> | Groundwater monitoring sampling for hydrocarbon pollution.  |
| <b>Responsible Party</b>   | Franchisee/Proponent.   |

**Table 2. Surface water**

| <b>Construction/Decommissioning phase</b> |   |
|---|---|
| <b>Description</b>                        | <p>Surface water contamination can be caused by leakages and spills of petroleum products (i.e. oil leakages, hydrocarbon fuel, lubricants and grease) from machinery and heavy-duty vehicles during construction and decommissioning phase.</p> <p>Oil spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could be impaired.</p> <p>The Okavango River is approximately 7 kilometres north of the site. Care must be taken to avoid contamination of soil and surface water.</p> |

|                                     |  |
|-------------------------------------|--|
| <b>Proposed Mitigation Measures</b> | Machinery should not be serviced on the facility to avoid spills. All spills should be cleaned up as soon as possible. Hydrocarbon/chemical contaminated soil; clothing or equipment should not be washed within 25m of any surface water depressions (i.e. pans, streams and rivers, etc.). |
| <b>Proposed Monitoring</b>          | Regular visual inspection. Surface water quality monitoring in cases of evident pollution.   |
| <b>Responsible Party</b>            | Contractor.  |

| <b>Operational phase</b>            |  |
|-------------------------------------|--|
| <b>Description</b>                  | Spillages might occur during fuel delivery and loading of road transport tanker trucks. This may also occur during filling of vehicles and containers. Contaminated soil might pose a risk to surface water. |
| <b>Proposed Mitigation Measures</b> | All spills should be cleaned up as soon as possible. The presence of an emergency response plan and suitable equipment is advised, so as to react to any spillage or leakages properly and efficiently.      |
| <b>Proposed Monitoring</b>          | Regular visual inspection. Surface water monitoring sampling for hydrocarbon pollution.  |
| <b>Responsible Party</b>            | Franchisee/Proponent.  |

**Table 3. Dust pollution and air quality control**

| <b>Construction/Decommissioning phase</b> |  |
|---|--|
| <b>Description</b>                        | Dust may be produced during the construction and decommissioning phases; and might be worsened when strong winds occur. These are expected to be site specific and could potentially pose a slight nuisance to the neighbouring villages. In general, the construction of the proposed fuel retail facility will have a minimal impact on the surrounding air quality. |



|                                     |  |
|-------------------------------------|--|
| <b>Proposed Mitigation Measures</b> | Excavation, handling and transport of materials must be avoided under high wind conditions. Dust suppression measures (e.g. dampening the soil with water) may be required from time to time, should dust become a nuisance. |
| <b>Proposed Monitoring</b>          | Regular visual inspection.   |
| <b>Responsible Party</b>            | Contractor.  |

| <b>Operational phase</b>            |   |
|-------------------------------------|---|
| <b>Description</b>                  | Air quality around the site could be impacted by exhaust fumes from the fleet of transport tanker trucks and vehicles accessing the facility. Hydrocarbon vapours will be released during delivery and dispensing, as liquid displaces the gaseous mixture in the tanks.  |
| <b>Proposed Mitigation Measures</b> | Vehicles idling time shall be minimised by putting up educative signs. All venting systems and procedures have to be designed according to SANS standards and placed in a sensible manner.<br><br>In terms of fuel storage tanks, the vapours will be released through vent pipes on the tanks. Vent pipes should be placed in such a manner as to prevent impact on potential receptors. |
| <b>Proposed Monitoring</b>          | It is recommended that regular air quality monitoring be conducted at the facility. A complaints register regarding emissions/smell should be kept and acted on if it becomes a regular complaint.  |
| <b>Responsible Party</b>            | Franchisee/Proponent.   |

Table 4. Health, safety & security

| <b>Construction/Decommissioning phase</b> |
|---|
|---|

|                                     |   |
|-------------------------------------|---|
| <b>Description</b>                  | During the construction and decommissioning phases, earthmoving equipment will be used on the site. This increases the possibility of injuries. The presence of equipment lying around on the site may encourage criminal activities i.e. theft.  |
| <b>Proposed Mitigation Measures</b> | Equipment and machinery operators should be equipped with ear protection equipment. Operations should be strictly between 07H00 to 18H00. First aid and safety awareness training for contractors.<br><br>Ensure the general safety and security at all times by providing day and night security guards and adequate lighting within and around the premises. The construction staff must be properly trained on safety and health issues of the project. Workers should be fully equipped with personal protective equipment gear. The site must be clearly demarked and fenced off to prevent unauthorised persons from accessing the site, who could get injured on site. |
| <b>Proposed Monitoring</b>          | Safety procedures evaluation. Health and safety incident monitoring.  |
| <b>Responsible Party</b>            | Contractor.   |

| <b>Operational phase</b>            |  |
|-------------------------------------|--|
| <b>Description</b>                  | The operations of the fuel retail facility can cause health and safety risks to workers on site. Occupational exposures are normally related to inhalation of fuel vapours and physical contact with fuels.  |
| <b>Proposed Mitigation Measures</b> | Ensure the general safety and security at all times by providing day and night security guards and adequate lighting within and around the premises. Operators must be properly trained on safety and health issues of the project. Well stocked first aid box which is readily available and accessible should be provided within |

|                            |   |
|----------------------------|---|
|                            | premises. Signs such as 'NO SMOKING' must be prominently displayed in parts where inflammable materials are stored on the premises. Workers should be fully equipped with personal protective equipment gear. |
| <b>Proposed Monitoring</b> | Regular inspection and incident monitoring report evaluation.   |
| <b>Responsible Party</b>   | Franchisee/Proponent.   |

**Table 5. Noise pollution**

| <b>Construction/Decommissioning</b> |   |
|-------------------------------------|---|
| <b>Description</b>                  | Noise pollution due to earthmoving equipment and machinery on site. Disturbance of the residence and business in the vicinity of the construction area will have to be taken into account during construction.  |
| <b>Proposed Mitigation Measures</b> | Sensitized construction vehicle drivers and machinery operators to switch off engines of vehicles or machinery not being used. Ensure engines of construction machinery are fitted with mufflers. Equipment and machinery operators should be equipped with ear protection equipment. Operations should be strictly between 07H00 to 18H00. |
| <b>Proposed Monitoring</b>          | Strict operational times. Regular inspection.   |
| <b>Responsible Party</b>            | Contractor.   |

| <b>Operational phase</b>            |  |
|-------------------------------------|--|
| <b>Description</b>                  | Noise pollution already exists around the site in the form of noise generated from vehicles using main roads B8 and D3410.   |
| <b>Proposed Mitigation Measures</b> | Delivery of fuel products by heavy-duty tankers should be limited to normal working hours (07h00 to 18h00). Loud music from vehicles fuelling up should be restricted. |
| <b>Proposed Monitoring</b>          | Strict delivery and collection times. Observation of on-site noise levels by the Manager or Supervisor.  |
| <b>Responsible Party</b>            | Franchisee/Proponent.  |

**Table 6. Generation of waste**

| <b>Construction/Decommissioning phase</b> |  |
|---|--|
| <b>Description</b>                        | This can be in a form of contaminated soil, building rubble and domestic waste. During Decommissioning excavated soil from the installation of the underground tank.   |
| <b>Proposed Mitigation Measures</b>       | Ensure that no excavated soil, refuse or building rubble generated on site is placed, dumped or deposited on adjacent/surrounding properties or land. Waste must be disposed-off at a suitable waste disposal site. Clear dumping area in the Sangwali settlement. |
| <b>Proposed Monitoring</b>                | Regular inspection and housekeeping procedure monitoring. Observation of site appearance by the manager.   |

|                          |             |
|--------------------------|-------------|
| <b>Responsible Party</b> | Contractor. |
|--------------------------|-------------|

| <b>Operational phase</b>            |   |
|-------------------------------------|---|
| <b>Description</b>                  | Waste in the form of contaminated soil due to spillage might be generated, but should be prevented through the use of containment areas as provided. Litter may also be produced during the operational phase.  |
| <b>Proposed Mitigation Measures</b> | Waste minimization policy should be formulated by the franchisee/proponent. There should be regular maintenance of the oil/water separator. Bio-remediation of contaminated soil should be enforced and/or hazardous waste must be disposed-off at a hazardous waste site. Removal of sand and other material from containment areas. Rubbish must be collected and disposed-off at a suitable waste disposal site. |
| <b>Proposed Monitoring</b>          | Regular visual inspection. Containment area inspections and monitoring of the oil/water separators.   |
| <b>Responsible Party</b>            | Franchisee/Proponent.   |

**Table 7. Traffic impacts**

| <b>Construction/Decommissioning phase</b> |
|---|
|---|

|                                     |   |
|-------------------------------------|---|
| <b>Description</b>                  | Construction and decommissioning related activities are expected to have a minimal impact on the movement of traffic on the D3410 and the B8 main road. Diversion of traffic or closure of roads is not expected.   |
| <b>Proposed Mitigation Measures</b> | It is recommended that if the need arises for traffic diversion road closure, the contractor should liaise with the relevant authorities. Speed limit signs and construction site warning signs must be erected to minimise accidents. Construction vehicles must be tagged with reflective signs or tapes to maximise visibility of the vehicles to avoid accidents. |
| <b>Proposed Monitoring</b>          | Observations of the traffic flow.   |
| <b>Responsible Party</b>            | Contractor.   |

| <b>Operational phase</b>            |   |
|-------------------------------------|---|
| <b>Description</b>                  | Traffic around the Service station  |
| <b>Proposed Mitigation Measures</b> | Delivery of fuel products by heavy-duty tankers should be limited to normal working hours (07h00 to 18h00). |
| <b>Proposed Monitoring</b>          | Strict delivery times monitoring. Observation of traffic by the Manager or Supervisor.                      |
| <b>Responsible Party</b>            | Franchisee/Proponent.   |

Table 8. Ecological impacts

| <b>Construction/Decommissioning phase</b> |   |
|---|---|
| <b>Description</b>                        | Large trees, namely Camel thorn ( <i>Acacia Erioloba</i> ) and the Rhodesian teak ( <i>Baikiaea plurijuga</i> ) are present at the site.  |
| <b>Proposed Mitigation Measures</b>       | The site has been partly disturbed. Where feasible, the large trees should be preserved and incorporated into the development. No disturbance of areas outside the designated working zone should be allowed. |
| <b>Proposed Monitoring</b>                | Regular site inspection.  |
| <b>Responsible body</b>                   | Contractors.  |

| <b>Operational phase</b>            |  |
|-------------------------------------|--|
| <b>Description</b>                  | Disturbance or impacts on fauna and flora. Very little impacts are expected as the area is partly disturbed and earmarked for development. |
| <b>Proposed Mitigation Measures</b> | Prevent disturbance of areas outside the designated working zone.  |
| <b>Proposed Monitoring</b>          | Regular site inspection.   |
| <b>Responsible Party</b>            | Franchisee/Proponent.  |

**Table 9. Overfilling of tanks and vehicles**

| <b>Operational phase</b>            |  |
|-------------------------------------|--|
| <b>Description</b>                  | Overfilling of vehicles and fuel storage tanks may take place.   |
| <b>Proposed Mitigation Measures</b> | This impact can be reduced by the installation of spill containment areas around the pumps and through proper training of the operators. Proper monitoring of the product levels in the tanks must take place to eliminate overfilling. Proper training of the operators on site is vital. |
| <b>Proposed Monitoring</b>          | Regular inspection of the level of fuel in tanks.  |
| <b>Responsible Party</b>            | Franchisee.  |

**Table 10. Hydrocarbon spillages**

| <b>Operational phase</b>            |  |
|-------------------------------------|--|
| <b>Description</b>                  | Fuel spillages might occur during delivery during the operational phase.   |
| <b>Proposed Mitigation Measures</b> | <p>This impact can be reduced by the installation of spill containment areas around the pumps and through proper training of the operators. All spills must be cleaned up immediately.</p> <p>The presence of an emergency response plan and suitable equipment is advised, so as to react to any spillage or leakages properly and efficiently.</p> |



|                            |   |
|----------------------------|---|
| <b>Proposed Monitoring</b> | Risk of impact from this can be lowered through proper training of staff and the installation of suitable containment structures. |
| <b>Responsible Party</b>   | Franchisee.   |

**Table 11. Fire and explosion hazard**

| <b>Operational phase</b>            |   |
|-------------------------------------|---|
| <b>Description</b>                  | Hydrocarbons are volatile under certain conditions and their vapours in specific concentrations and conditions are flammable.   |
| <b>Proposed Mitigation Measures</b> | There should be sufficient water available for the fire fighting purposes. Ensure that all fire-fighting devices are in good working order and they are serviced. All personnel have to be trained about responsible fire protection measures and good housekeeping such as the removal of flammable materials on site. |
| <b>Proposed Monitoring</b>          | Regular inspection should be carried out to inspect and test fire fighting equipment.   |
| <b>Responsible Party</b>            | Franchisee/Proponent.   |

**Table 12. Nuisance pollution**

| <b>Construction/Decommissioning phase</b> |
|---|
|---|

|                                     |  |
|-------------------------------------|--|
| <b>Description</b>                  | Aesthetics and inconvenience caused to person trying to access/exist the site.   |
| <b>Proposed Mitigation Measures</b> | The Construction supervisor should maintain tidiness on site at all times. Take cognition when parking vehicles and placing equipment. |
| <b>Proposed Monitoring</b>          | Regular visual site inspection.  |
| <b>Responsible Party</b>            | Contractors.   |

## 5. CONCLUSION

If the above-mentioned management recommendations are properly implemented, it is anticipated that most of the adverse impacts on the environment can be mitigated. An appointed environmental officer or consultant will need to monitor or audit the site throughout construction to ensure that the Environmental Management Plan (EMP) is fully implemented and complied with. The EMP caters for all project phases, but will need to be reviewed during all project phases, especially when revisions are made to the project development plans.

The EMP should be used as an on-site tool during all phases of the proposed project. Parties responsible for contravention of the EMP should be held accountable for any rehabilitation that may need to be undertaken. It is the Proponent's responsibility to initiate the update of the EMP once it has expired after three years from the date of the Environmental Clearance.