ENVIRONMENTAL MANAGEMENT PLAN (EMP)

PROPOSED CONTINUED OPERATION OF THE EXISTING PARK AND SELL FUEL RETAIL FACILITY AT BRAKWATER, WINDHOEK

APP-007137

Compiled by:

Matrix Consulting Services
P.O. Box 25824 Windhoek
Tel: +264-61 224 197
Fax: +264-61 212 165
info@matrixconsultingcc.com

March 2026

Compiled for:

Park and Sell @ LMI CC
P.O. Box 4901, Brakwater, Windhoek
Tel: +264-61 333 000
Mobile: +264-81 424 297
etienne@parkandsellnamibia.com

TABLE OF CONTENTS

LIST OF FIGURES

APPENDICES

Appendix A	**Support from relavent authority**
Appendix B	**Lead Consultant Resume**

TEAM MEMBERS		
NAME	**POSITION**	**COMPANY**
M. Shippiki	Principal Hydrogeologist	Matrix Consulting Services
D. Bille	Geo-Scientist	Matrix Consulting Services

CLIENT:	**Park and Sell @ LMI CC** **PO Box 4901** **Brakwater, Windhoek**
ENVIRONMENTAL CONSULTANT	Matrix Consulting Services
AUTHOR:	Mize Shippiki Principal Hydrogeologist / Environmental Practioner P.O. Box 25824 Windhoek Tel: +264-61 224197 Fax: +264-61 212165
REPORT STATUS:	**FINAL**
SIGNATURE:	

1. INTRODUCTION AND BACKGROUND

An Environmental Management Plan (EMP) has been commissioned by Park and Sell @ LMI CC (proponent) for the existing Park and Sell fuel retail facility in Brakwater, Windhoek. The EMP serves as a managing tool for the continued operations and possible decommissioning activities of the existing fuel retail facility (hereinafter also referred to as "service station").

The Park and Sell fuel retail facility at Brakwater has been in operation for about 8 years now, however, since its inception the site has never had an Environmental Clearance Certificate (ECC). Matrix Consulting Services was appointed to undertake the necessary activities to enable the application for an ECC with the Environmental Commissioner, in order to comply with the requirements of the Environmental Management Act (No. 7 of 2007) and its regulations.

This EMP is developed to outline measures to be implemented in order to minimise adverse environmental degradation associated with this development. The document serves as a guiding tool for the contractors and workforce on their roles and responsibilities concerning environmental management on site, and also provides an environmental monitoring framework for all project phases of the development. This management plan aims to take a pro-active route by addressing potential problems before they occur. The EMP acts as a stand-alone document, which can be used during the various phases of the development.

In this report,

a) the **Contractor** (and its sub-contractors) refers to construction personnel responsible for the *maintenance and possible decommissioning activities* of the development.

b) the **Project Personnel** refers to the proponent, operator and suppliers responsible for the *operational activities* of the development.

The purpose of the EMP is to:

- ✓ Train employees and contractors with regard to environmental obligations.
- ✓ Promote and encourage good environmental management practices.
- ✓ Outline responsibilities and roles of Park and Sell @ LMI CC; and the contractor in managing the environment.
- ✓ Describe all monitoring procedures required to identify environmental impacts.
- ✓ Minimise disturbance of the natural environment.
- ✓ Develop waste management practices.
- ✓ Prevent all forms of pollution.
- ✓ Protect the natural environment.
- ✓ Prevent soil and water erosion.
- ✓ Comply with all applicable laws, regulations and standards for environmental protection.

The maintenance and operational activities of the fuel retail facility entails:

- ✓ Maintenance of buildings and associated facilities.
- ✓ Maintenance (up keep) of fuel storage tanks, reticulation pipelines, dispensing points and associated spill control structures.
- ✓ Maintenance of associated electrical supply.
- ✓ Transport of fuel supply with road transport tanker trucks.
- ✓ The dispensing of fuel to vehicles and/or approved containers.
- ✓ Removal of all infrastructure not reused during future use of land; and
- ✓ Rehabilitation of the land.

1.1. Locality and Land Use

The project site (22.406164°S; 17.071683°E) is situated on Plot H/48 (Portion 9) along the B1 highway, in the Brakwater industrial area of Windhoek. See Figure 1.

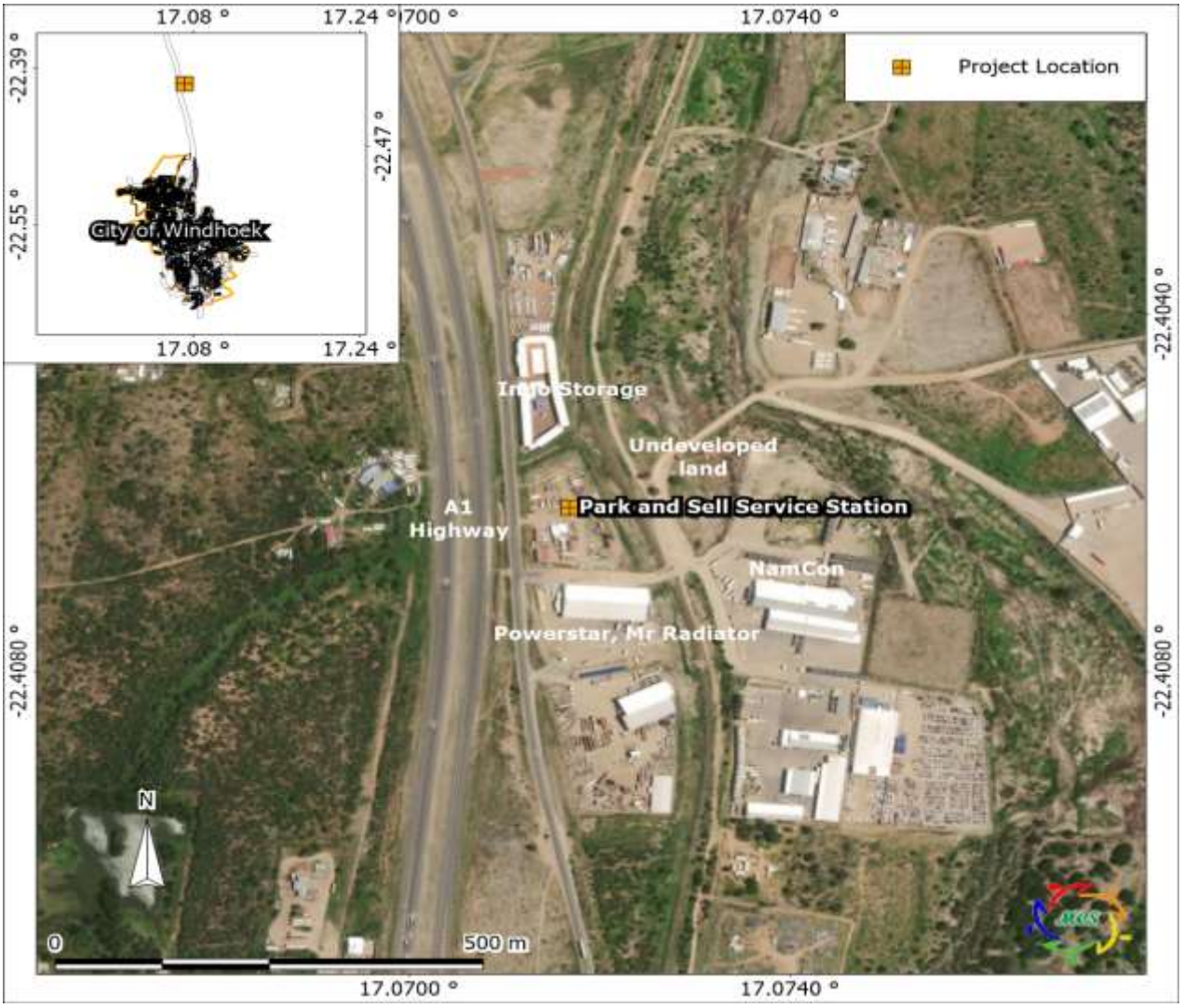

Figure 1. Project Location (22.406164°S; 17.071683°E)

The fuel retail facility occupies an approximate land size of 5,000m^2. The site is surrounded by business properties to the north and south. East of the site is a railway servitude, followed by undeveloped land. West of the site is a service road followed by the B1 highway servitude.

Figure 2. Layout of the site

1.2. Existing Installation and Related Activities

The fuel installation at the site consists of two (2) double-hose dispensing pump units fixed on separate pump islands. A separate single-hose dispensing pump unit, customer own collection (COC), is situated 30m southeast of the forecourt area.

The forecourt area is covered with concrete, whereas the rest of the site is bare soil. The site is equipped with spill containment and drainage facilities; which are connected a separator pit. Two (2) fuel storage tanks are present at the site, namely;

- 1 x Tank – 14 m^3 underground unleaded petrol (ULP)
- 1 x Tank – 23 m^3 aboveground diesel (50ppm)

The aboveground tank is contained in concrete bund wall.

1.3. Planned Installation

The proponent intends to do some alterations to the storage tanks in the near future by adding one more aboveground 23m^3 diesel storage tank.

2. LEGISLATIVE FRAMEWORK

I. The Namibian Constitution

The Namibian Constitution has a section on principles of state policy. These principles cannot be enforced by the courts in the same way as other sections of the Constitution. But they are intended to guide the Government in making laws which can be enforced.

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

II. Environmental Management Act No.7 of 2007

This Act provides a list of projects requiring an Environmental assessment. 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 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.

The Environmental Management Act has three main purposes:

(a) to make sure that people consider the impact of activities on the environment carefully and in good time

(b) to make sure that all interested or affected people have a chance to participate in environmental assessments

(c) to make sure that the findings of environmental assessments are considered before any decisions are made about activities which might affect the environment

Line Ministry: Ministry of Environment and Tourism

III. The Water Act (Act No 54 of 1956)

The Water Act No. 54 of 1956 as amended, aims to provide management of the national water resources to achieve sustainable use of water for the benefit of all water users.

The Act broadly controls the use and conservation of water for domestic, agricultural, urban and industrial purposes; to control, in certain respects, the use of sea water; to control certain activities on or in water in certain areas; and to control activities which may alter the natural occurrence of certain types of atmospheric precipitation.

IV. Water Resources Management Act (No.11 of 2013)

The Water Act 54 of 1956 will be superseded by this new Water Resources Management Act 2013. The latter has been brought into force on 29 August 2023 by GN 268 2023 (GG 8187) Regulations relating to appeals to Water Tribunal in GN 270 (GG 8188). An overlapping period of 18 months is established to enable the phasing in of the new Act whilst the former is phased out.

This Act provides for the management and conservation of all water resources of Namibia including the whole or any part of a watercourse or an aquifer, the sea and meteoric water. The objects of this Act are to ensure that the water resources of Namibia are managed, developed, used, conserved and protected in a manner consistent with, or conducive to, the fundamental principles set out in section 3.

Line Ministry: Ministry of Agriculture, Water Affairs and Forestry

V. Environmental Assessment Policy of Namibia (1995)

Environmental Assessments (EA's) 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 EA's) 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 private sector, should be subjected to the established EA procedures.

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

- ✓ **Cradle to Grave Responsibility**

  This principle provides that those who manufacture potentially harmful products should be liable for their safe production, use and disposal and that those who initiate potentially polluting activities should be 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 decisions making.

Line Ministry: Ministry of Environment and Tourism

VI. Petroleum Products and Energy Act of Namibia (Act No. 13 of 1990)

The Act makes provision for impact assessment for new proposed fuel retail facilities and petroleum products known to have detrimental effects on the environment.

VII. Draft Pollution Control and Waste Management Bill *(Guideline only)*

The operations of the existing Park and Sell service station only applies to Parts 2, 7 and 8 of the Bill.

Part 2 stipulates 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 licence issued under section 23. It further provides for procedures to be followed in licence application, fees to be paid and required terms of conditions for air pollution licences.

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.

VIII. Atmospheric Pollution Prevention Ordinance of Namibia No. 11 of 1976

The Ordinance prohibits anyone from carrying on 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 gases produced by the scheduled process. Best practice would be to notify the line Ministry about emissions but it is not a legal requirement.

Line Ministry: Ministry of Health and Social Services

IX. Hazardous Substances Ordinance No. 14 of 1974

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

Line Ministry: Ministry of Health and Social Services

3. RECEIVING ENVIRONMENT

This section lists the most important environmental characteristics of the project area and provides a statement on the potential environmental impacts.

3.1. Climate

Classification of climate:	Semi-arid area
Average rainfall:	Rainfall in the area is averaged to be between 300 mm-350 mm per year.
Variation in rainfall:	Variation in rainfall is averaged to be 30-50% per year.
Average evaporation:	Evaporation in the area is averaged to be between 3000-3200 mm per year.
Precipitation:	The highest summer rains are experienced in February. Irregular and unpredictable, high intensity, highly localised storm events between October and April does occur.
Water Deficit:	Water deficit in the area is averaged to be between 1701-1900 mm per year.
Temperatures:	The temperatures are highest on average in December, at around 23.9°C. The lowest average temperatures in the year occur in July, when it is around 10.4°C.
Wind direction:	Wind direction in the area is predominantly from the north or northeast.

The Brakwater area and its surroundings can be classified as a water deficit area with annual evaporations exceeding the mean annual rainfall by far. Groundwater in Windhoek is an important source of potable water for the City of Windhoek and has to be conserved and protected from pollution at all cost.

3.2. Topography and Drainage

The site itself has a relatively flat topography, with a gentle slope towards the east. The landscape is classified as being in the Khomas Hochland Plateau region, which is characterized by rolling hills in the west with many summit heights equivalent reflecting older land surfaces.

The site is located within the catchment of the Klein Windhoek River, an ephemeral river, draining in a northerly direction. The relief of the river allows good drainage from the site towards the river, which is situated approximately 200m east of the site. Care should be taken to avoid contamination of this water resource in the area, especially during rainy seasons, as water in this river is used for human and animal use in the area, and downstream of the site.

Proper drainage systems should be developed at the facility, in order to control the flow of surface water run-off from the site; thereby preventing any possible surface pollution emanating from daily operational activities at the fuel facility.

3.3. Hydrogeology

Metasedimentary rocks of the Swakop Group, which is part of the Damara Sequence, constitute the aquifer in the area. Geological lineaments and joints found in area form the major underground water conduits and hence determine the conditions of the aquifer. The geology underlying the study area is prone to plastic deformation rather than brittle, fracturing, exhibits significantly lower secondary porosity and permeability. Moreover host rock fracturing along fault planes results in better development of secondary porosity in quartzite compared to schistose terrain such that the aquifer reaches its maximum potential in this type of setting.

Although the study area was not mapped during vulnerability study of the Windhoek aquifer in 2000, the presence of sensitive geological structures present in the area might form preferential pathways to the underlying aquifer. In order to protect these groundwater resources, pollution to these structures should be avoided at all cost.

According to the City of Windhoek and the Department of Water Affairs database (DWA), 1 borehole exist within a 1km radius of the site. Depth to water table is expected to be less than 30m below groundwater level (mbgl).

Groundwater belongs to the government of the Republic of Namibia; hence the area does fall within the Windhoek-Gobabis Subterranean Water Control Area, of Government Notice 189 of 6 February 1970. This means that Government controls groundwater usage in this area. To date, no known spillage and / or leakages is known (or reported) at the site.

3.3.1. Surface- and Groundwater use & users

Surface and groundwater are essentially one resource, physically connected by the hydrologic cycle. Streams interact with groundwater in three basic ways, i.e. *streams gain water from inflow of groundwater through the streambed, streams lose water by outflow through the streambed, or they do both depending upon the location along the stream.* It is the groundwater contribution that keeps streams flowing between precipitation events. As a result, proper management of the risks associated with fuel storage and handling are essential in order to prevent surface and groundwater pollution. Preventative measures and strategies must form an integral part of the Environmental Management Plan (EMP). Possible release of contamination on site will mainly be mitigated by the well designed concrete containment bundwall and other containment structures installed at the site. The bundwall must be designed and installed to hold at least 110 percent of the volume of the tank.

The consultant recommends that regular visual inspections of the storage tank, dispensing pumps and pipes, tank farm and operational areas be adopted. It is important to always release clean water from containment as soon as possible after any rain episode. The longer the water stays contained in the tank farm, the greater the opportunity for it to become contaminated with fuel (e.g., from a nozzle). In addition, corrosion may begin on the tank's surface or supporting structure, compromising its integrity. And the volume of rainwater decreases containment capacity for petroleum in the event of a spill. Ideally, this water should be released from containment through an oil and water separator, which is a device that traps the oil and releases the water. The separator must be sized for the anticipated flow volume, and it must be cleaned periodically.

Personnel should be trained to identify and eliminate risks; to conduct routine inspections of fuel storage containers; to dispense fuel and operate pump shutoffs properly; to contain spills; and to conduct cleanup procedures, including the safe operation of equipment. Employees must be involved in scheduled reviews of operations, identifying steps you can take to minimize spills.

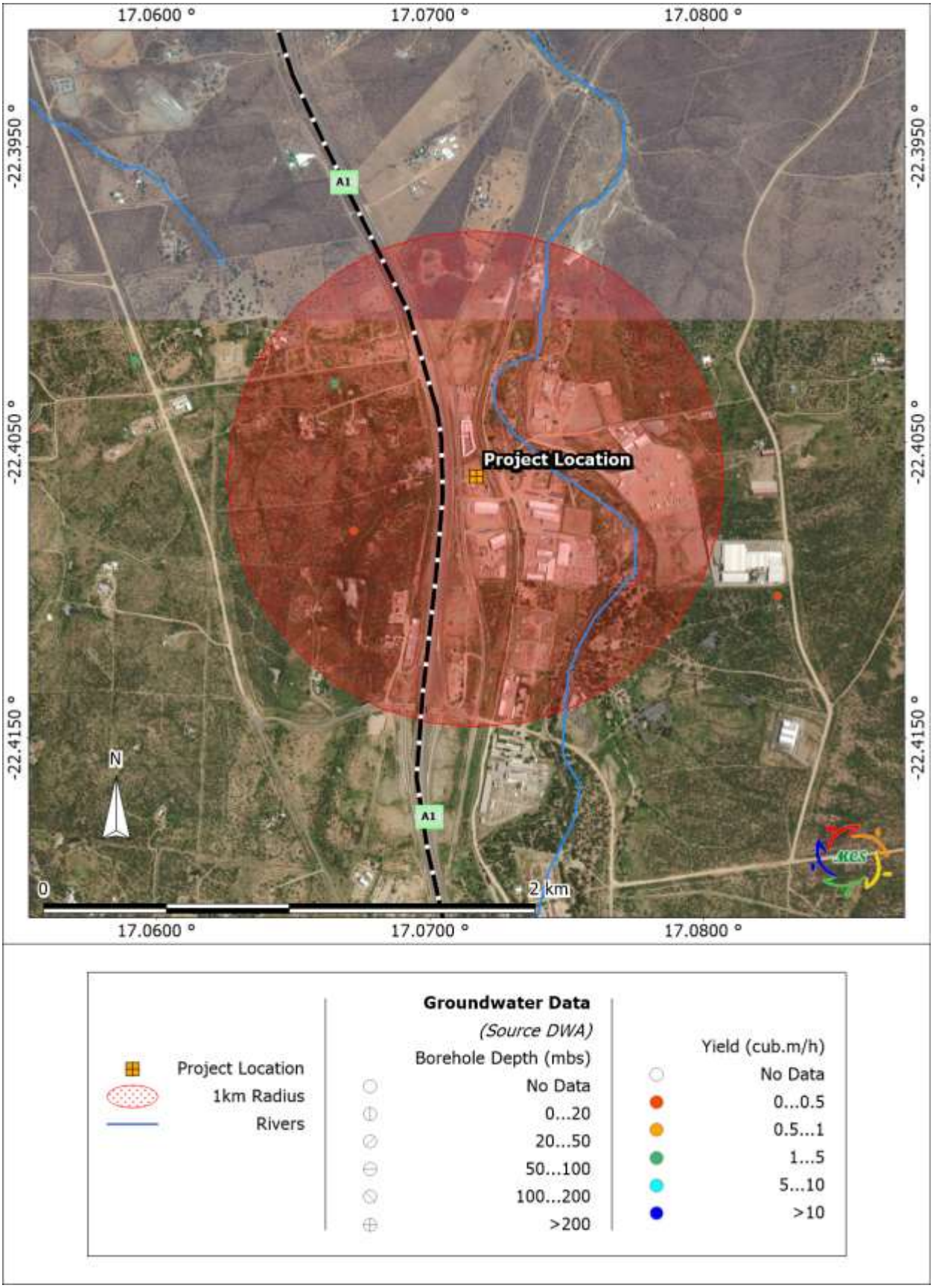

Figure 3. Hydrogeological map

According to City of Windhoek Environmental Structure Plan of 2004, an environmental assessment and mapping study was conducted to provide a strategic overview of the environmental aspects of Windhoek. As a result, control zones are based upon the following;

- ✓ The critical sensitivity of the southern Windhoek aquifer.
- ✓ The sensitivity of the catchment of the Goreangab Dam, and surface water resources, including rivers and streams throughout Windhoek.
- ✓ The sensitivity of the environment or a specific critical environmental component.
- ✓ The relative importance of the 'sense of place' or the specific character of Windhoek determined through resident participation, which includes topography and landscape quality as well as cultural / historical resources.
- ✓ The need to protect open space in Windhoek, which includes the river and aquatic systems, as well as the ridgelines, hills and mountains, and natural areas surrounding the city.
- ✓ The need to protect, manage and conserve sensitive natural vegetation cover.

The project site is considered to have a low environmental sensitivity status. See Figure 4 for the environmental sensitivity map

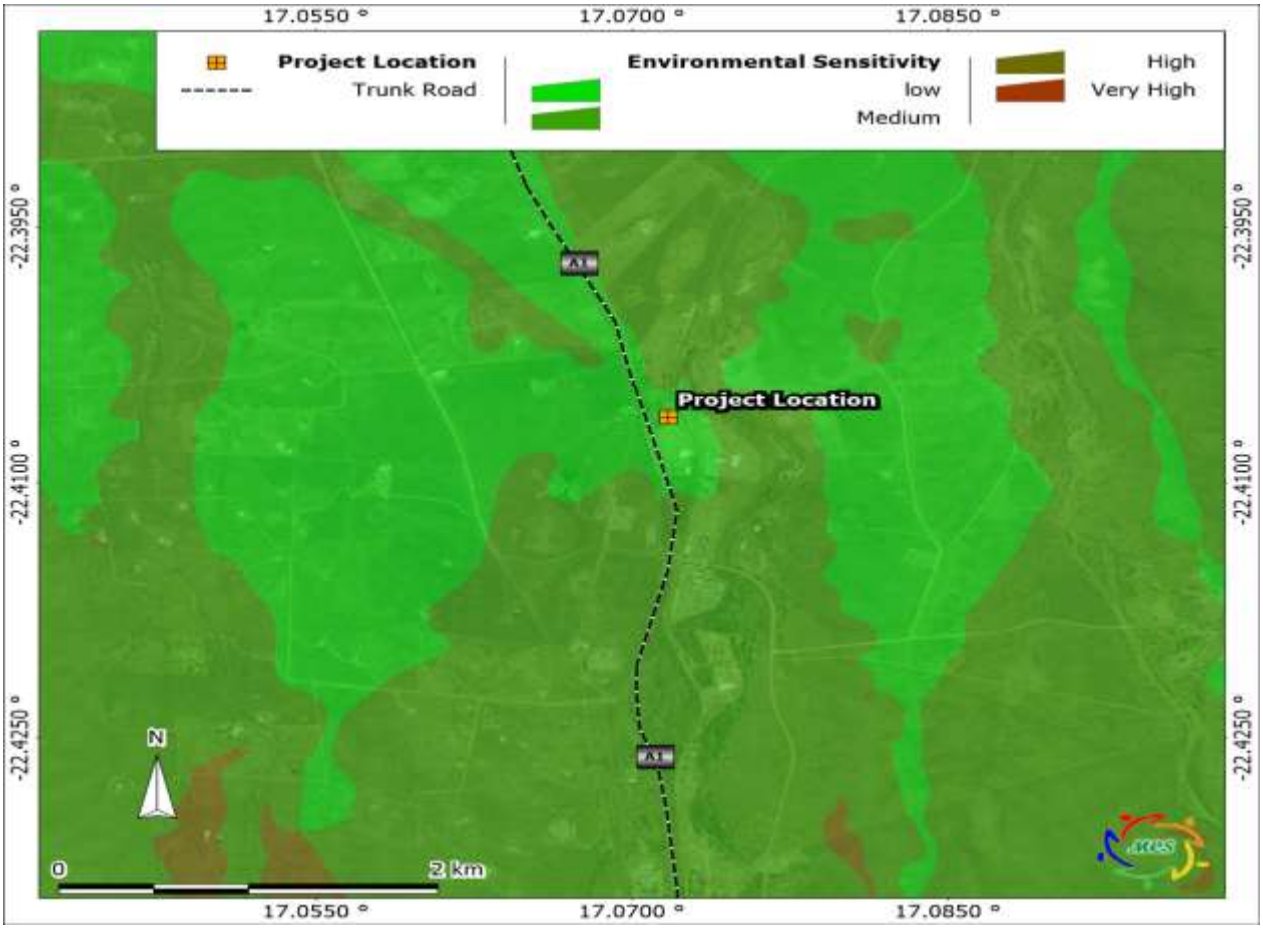

Figure 4. Environmental Sensitivity of the Project Area

4. ENVIRONMENTAL MANAGEMENT PLAN

4.1. Responsibilities for environmental management

Park and Sell @ LMI CC will be responsible for environmental control on site during any maintenance and operational phase. It is very important pre-construction briefing meetings be held to reach an agreement on specific roles of various parties and penalties for non-compliance.

The operator or owner of the service station is primarily responsible for environmental monitoring, ensuring regular maintenance and testing of systems like water treatment to comply with environmental regulations; this includes monitoring for potential pollutants like fuel spills and managing runoff from the forecourt.

4.2. Training and induction

Park and Sell @ LMI CC are bound to 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 environmental requirements of the project.

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 that they will comply. All senior staff should familiarise themselves with the full contents of the EMP and its implications. Senior staff is expected to train and assist the rest of the employees on the contents of the EMP.

4.3. Environmental incident reporting

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

All complaints received from the neighbouring community should be directed to the manager of Park and Sell Service Station. Management should be able to respond to the complainant within a week (even if pending further investigation).

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. Matrix Consulting Services) appointed by Park and Sell @ LMI CC to monitor and review the on-site environmental management and implementation of this EMP.

4.9. Site Management

Areas outside the 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.

3.9.1 Access routes and work sites

All vehicles and trucks will access the fuel retail facility from the nearby service road. Work sites shall be clearly demarcated and road signs erected were needed. The general public should not have access to the work sites during maintenance and decommissioning phase.

3.9.2 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 any other purpose, is to be made at the fuel retail facility during any of the phases (maintenance, operational and possible 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 fuel retail facility together with 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.

3.9.3 Staff management

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

3.9.4 Waste management

The developer shall remove all waste off-site to designated waste disposal sites. Sufficient bins or containers on-site to store any solid or liquid waste produced should be provided by Park and Sell Service Station. The bins and containers should be weatherproof and scavenger-proof. Waste from the site must be properly collected and disposed of at the Kupferberg waste disposal site, or to other designated satellite disposal sites in the area.

3.9.5 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 of at a licensed suitable waste disposal facility.

3.9.6 Hydrocarbons management

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

The Contractor shall take all reasonable measures to prevent surface or groundwater pollution from the release of oils and fuels.

Sufficient space should be left in fuel storage tanks to allow for fuel expansion and to prevent leakage of fuel from the fuel retail facility.

3.9.7 Flood management

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.

5. ENVIRONMENTAL MANAGEMENT MEASURES DURING PRE-OPERATIONAL ACTIVITIES

Planning phase	
Description	▪ Compliance Requirements ▪ Public Consultation ▪ Environmental Awareness ▪ Health and safety Aspects
Proposed Mitigation Measures	➢ Develop an updated environmental management plan (EMP) to comply with the requirements of the Environmental Management Act (2007) and its regulations of 2012. ➢ Identify and address all environmental and social issues. ➢ Ensure that all persons involved in the project are aware of, and are familiar with, the environmental requirements for the project. ➢ Ensure that all contractors, sub-contractors, suppliers, etc. are familiar with, understand and adhere to the EMP. ➢ Develop or update environmental emergency preparedness procedures. ➢ Establish personnel protection standards and mandatory safety practices and procedures for the development. ➢ Establish the lines of communication among contractors and subcontractors involved in work operations for safety and health matters. ➢ Conduct HIV/AIDS Awareness Programme for all operations of the development for not less than 90% of workers.
Proposed Monitoring	Record of environmental compliance (ECC). Record of awareness training and attendance register. Record of health and safety plan.
Responsible Party	Proponent / ECO

6. ENVIRONMENTAL MANAGEMENT MEASURES DURING MAINTENANCE, OPERATIONAL AND DECOMMISSIONING PHASES

This section will look at the potential environmental impacts, which may arise during the site maintenance, operational and possible decommissioning phase of the fuel retail facility. The impacts associated with maintenance and possible site decommissioning activities are similar to those of construction activities.

At the time of site closure, the Environmental Management Plan must be revised to cater for the detailed decommissioning activities and any changes made to the development.

Groundwater

Site maintenance/Decommissioning phase	
Description	Groundwater contamination can be caused by leakages and spills of petroleum products (i.e. oil leakages, hydrocarbon fuel, lubricants and grease) from equipment, machinery and vehicles during maintenance and decommissioning works. Care must be taken to avoid contamination of soil and groundwater.
Proposed Mitigation Measures	➢ Prevent spillages of any chemicals and petroleum products (i.e. oils, lubricants, petrol and diesel). ➢ Use drip trays, linings or concrete floors when evidence of leaks are observed on vehicles, equipment and machinery.
Proposed Monitoring	Regular visual inspection.
Responsible Party	Park and Sell @ LMI CC (operator)/ Contractors.

Operational phase	
Description	Groundwater quality could be impacted through leachate of oil leakages, hydrocarbon fuel, lubricants and grease from trucks and vehicles frequenting the facility. Spillages may also occur during fuel delivery to the underground storage tanks from road transport tanker trucks. Care must be taken to avoid contamination of soil and groundwater.
Proposed Mitigation Measures	➢ 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 SANS 10089:1999, SANS 100131:1977, 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.
Proposed Monitoring	Groundwater monitoring sampling for hydrocarbon pollution.
Responsible Party	Park and Sell @ LMI CC (operator)/ Contractors.

Surface Water

Site maintenance/Decommissioning phase	
Description	The site gently slopes to the east. Surface drainage in the area takes place towards the Klein Windhoek River, east of the site. Contamination of surface water might occur through petroleum, chemical and hazardous substances. Contaminants in the form of oil leakages, diesel, lubricants and grease from the construction equipment and machinery may occur during the construction phase. Oil Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could be impaired.
Proposed Mitigation Measures	▪ All spills should be cleaned up as soon as possible. ▪ Care must be taken to avoid contamination of the nearby river. ▪ No chemical, hydrocarbon products and/or hydrocarbon contaminated soil should be disposed of into the nearby streams or waterways.
Proposed Monitoring	Regular visual inspection. Surface water quality monitoring in cases of evident pollution.
Responsible Party	Park and Sell @ LMI CC (operator)/ Contractors.

Operational phase	
Description	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. Spillages and/or leakages of various possible contaminants might occur due to failure of reticulation pipelines or storage tanks. Contaminated soil might pose a risk to surface water.
Proposed Mitigation Measures	▪ 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. ▪ Ensure all stormwater drains or channels are clear of litter or obstructing material. ▪ Regular pipeline and tank pressure tests should be conducted
Proposed Monitoring	Regular visual inspection. Surface water monitoring sampling for hydrocarbon pollution.
Responsible Party	Park and Sell @ LMI CC (operator)/ Contractors.

Air quality (including dust)

Site maintenance/Decommissioning phase	
Description	Dust may be produced during the maintenance and decommissioning activities; 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 properties. Possible air pollution in the form of emissions from construction vehicles and equipment could also deteriorate air quality in the area.
Proposed Mitigation Measures	➢ It must be ensured that all vehicles entering the site and machinery used in maintenance activities are in good working order to prevent unnecessary emissions. ➢ Vehicles should not be allowed to idle for unnecessarily long periods of time. ➢ Excavation, handling and transport of materials must be avoided under high wind conditions. ➢ Dust suppression measures (e.g. dampening with water) may be required from time to time, should dust become a nuisance.
Proposed Monitoring	Regular visual inspection.
Responsible Party	Park and Sell @ LMI CC (operator)/ Contractors.

Operational phase	
Description	Air quality around the site could be impacted by exhaust fumes from vehicles frequenting the site. Hydrocarbon vapours will be released during delivery and dispensing, as liquid displaces the gaseous mixture in the tanks.
Proposed Mitigation Measures	➢ Vehicle 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. ➢ 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. Use vapour recovery equipment and techniques to avoid air pollution and minimise fuel loss.
Proposed Monitoring	It is recommended that regular air quality monitoring be conducted at the facility, if air quality becomes a nuisance. Complaints register regarding emissions/smell should be kept and acted on if it becomes a regular complaint.
Responsible Body	Park and Sell @ LMI CC (operator)/ Contractors.

Health and Safety

Site maintenance/Decommissioning phase	
Description	Safety issues could arise from vehicles, machinery, equipment and tools that will be used on site during the maintenance and decommissioning activities. This increases the possibility of injuries and the contractor must ensure that all staff members are made aware of the potential risks of injuries on site.
Proposed Mitigation Measures	▪ Equipment and machinery operators should be equipped with ear protection equipment. ▪ The maintenance / construction staff must be properly trained on safety and health issues of the project. ▪ Workers should be fully equipped with the right personal protective equipment gear for the task at hand. ▪ Work sites must be clearly demarked and fenced off to prevent unauthorised persons from accessing the site, who could get injured on site.
Proposed Monitoring	Safety procedures evaluation. Health and safety incident monitoring.
Responsible Party	Park and Sell @ LMI CC (operator)/ Contractors.

Operational phase	
Description	The operations of the 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.
Proposed Mitigation Measures	▪ 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.
Proposed Monitoring	Regular inspection and incident monitoring report evaluation.
Responsible Body	Park and Sell @ LMI CC (operator)/ Contractors.

Noise Pollution

Site maintenance/Decommissioning phase	
Description	Noise pollution already exists at the site due to vehicular movement in the area. Vehicles and equipment will be utilised during maintenance and site closure activities and noise would be generated. It is expected that the noise generated will be localised and will not have a significant impact on any third parties.
Proposed Mitigation Measures	▪ Sensitize drivers and operators of vehicles, equipment and machinery to switch off engines when not being used. ▪ Ensure engines of equipment and machinery are fitted with mufflers. ▪ Equipment and machinery operators should be equipped with ear protection equipment. ▪ Audio equipment (if any) should not be played at levels considered intrusive by others. ▪ Operations should be strictly between 07H00 to 19H00.
Proposed Monitoring	Strict operational times. Regular inspection.
Responsible Party	Park and Sell @ LMI CC (operator)/ Contractors.

Operational phase	
Description	Noise pollution already exists around the site due to vehicles travelling along the service road in the area.
Proposed Mitigation Measures	▪ Delivery of fuel products by heavy-duty tankers should be limited to normal working hours (06h00 to 19h00). ▪ Loud music from vehicles fuelling up should be restricted. ▪ Maintain the grievance mechanism to capture public perceptions and complaints with regard to noise impacts, track investigation actions and introduce corrective measures for continuous improvement.
Proposed Monitoring	Strict delivery and collection times. Observation of on-site noise levels by the Manager or Supervisor.
Responsible Body	Park and Sell @ LMI CC (operator)/ Contractors.

Waste Generation

Site maintenance/Decommissioning phase	
Description	This can be in a form of general litter, oil spills or leakages of petroleum products might occur during the maintenance and decommissioning works.
Proposed Mitigation Measures	▪ Ensure that sufficient weather- and vermin-proof bins / containers are present on site for the disposal of solid waste ▪ No disposal of /or burying of waste on site should be conducted. No waste should be burned on site. ▪ Hazardous waste storage is to be clearly marked to indicate the presence of hazardous substances, and the protocols associated with handling of such hazardous wastes shall be known by all relevant staff members. ▪ Existing ablution facilities at the site shall be used by the contractor during this phase. No urinating outside these designated facilities. ▪ Waste must be disposed off at designated waste disposal site.
Proposed Monitoring	Regular inspection and housekeeping procedure monitoring. Observation of site appearance by the manager.
Responsible Party	Park and Sell @ LMI CC (operator)/ Contractors.

Operational phase	
Description	Waste such as contaminated soil, litter, empty cans of engine oil will be generated during the operational phase.
Proposed Mitigation Measures	▪ Contaminated soil must be removed and disposed off at a suitable waste disposal site. ▪ Waste bins must be available at the fuel retail facility at all times. Waste must be appropriately collected and disposed off at an approved appropriate waste disposal site. ▪ Oil-water separator effluent originating from storm water runoff, tank bottoms and washing activities should be separated before disposal of the water. Regular monitoring of the oil-water separator outflow must be conducted. ▪ Care should be taken when handling contaminated material. The cradle to grave principal should be kept in mind during waste disposal.

Proposed Mitigation Measures	▪ Any non-biodegradable hazardous material (i.e. oil cans and containers etc.) generated should be properly stored in containment structures, collected and transported to a suitable hazardous waste disposal site.
Proposed Monitoring	Regular visual inspection of the fuel infrastructure.
Responsible Body	Park and Sell @ LMI CC (operator)/ Contractors.

Traffic

Site maintenance/Decommissioning phase	
Description	Slow traffic frequenting the work site may become a nuisance to motorists on the road.
Proposed Mitigation Measures	▪ It is recommended that if the need arises for traffic diversion road closure, the contractor should liaise with the relevant authorities. ▪ Speed limit 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 and avoid accidents. ▪ Construction vehicles should not be allowed to obstruct the road, hence no stopping in the road, wholly or partially, but rather pull off the road or park on the roadside.
Proposed Monitoring	Observations of the traffic flow along service and access roads.
Responsible Party	Park and Sell @ LMI CC (operator)/ Contractors.

Operational phase	
Description	Traffic around the Service station
Proposed Mitigation Measures	▪ Delivery of fuel products by heavy-duty tankers should be limited to normal working hours (07h00 to 19h00).
Proposed Monitoring	Strict delivery times monitoring. Observation of traffic by the Manager or Supervisor.
Responsible Body	Park and Sell @ LMI CC (operator)/ Contractors.

Ecological impacts

Site maintenance/Decommissioning phase	
Description	The site is already build-up with limited vegetation making up the landscape plan of the site. No known conservation worthy vegetation exists.
Proposed Mitigation Measures	➢ No disturbance of areas outside the designated working zone should be allowed.
Proposed Monitoring	Regular site inspection.
Responsible Party	Park and Sell @ LMI CC/ Contractors.

Operational phase	
Description	Disturbance or impacts on fauna and flora. The site is already built-up with very little vegetation present.
Proposed Mitigation Measures	➢ Disturbance of areas outside the designated working zone is not allowed. ➢ No vegetation should be removed outside the designated project area.
Proposed Monitoring	Regular site inspection.
Responsible Body	Park and Sell @ LMI CC (operator)/ Contractors.

Overfilling of tanks and vehicles

Operational phase	
Description	Overfilling of vehicles and fuel storage tanks may take place.
Proposed Mitigation Measures	➢ 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.
Proposed Monitoring	Regular inspection of the level of fuel in tanks.
Responsible Body	Park and Sell @ LMI CC (operator)/ Contractors.

Nuisance Pollution

Site maintenance/Decommissioning phase	
Description	Aesthetics and inconvenience caused to person trying to access/exit the site.
Proposed Mitigation Measures	▪ Contractor should maintain tidiness on site at all times. Take cognition when parking vehicles and placing equipment. ▪ Contractors should be attentive to the importance of not littering. Littering is unsightly and has a negative visual impact. ▪ Sufficient waste bins must be provided onsite and must be emptied regularly.
Proposed Monitoring	Regular visual site inspection.
Responsible Party	Park and Sell @ LMI CC (operator)/ Contractors.

Fire and explosion hazard

Operational phase	
Description	Hydrocarbons are volatile under certain conditions and their vapours in specific concentrations and conditions are flammable.
Proposed Mitigation Measures	▪ There should be sufficient water available for 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. ▪ Emergency response procedures should be in place so as to alert the employees on how to react to fire and explosions incidents. ▪ Regular inspections should be carried out to inspect and test fire fighting equipment and emergency response at the development. ▪ Ensure sufficient water is available all the time for fire fighting purposes. ▪ It is highly recommended that electrical wiring of the facility be installed and approved by a qualified electrician who will issue a Certificate of Compliance.
Proposed Monitoring	Regular inspections should be carried out to inspect and test fire fighting equipment.
Responsible Body	Park and Sell @ LMI CC (operator)/ Contractors.

Hydrocarbon Spillages

Operational phase	
Description	Fuel spillages might occur during delivery during the operational phase.
Proposed Mitigation Measures	▪ 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. ▪ The presence of an emergency response plan and suitable equipment is advised, so as to react to any spillage or leakages properly and efficiently.
Proposed Monitoring	Risk of impact from this can be lowered through proper training of staff and the installation of suitable containment structures.
Responsible Body	Park and Sell @ LMI CC (operator)/ Contractors.

7. DETECTING LOSS OF PRODUCT

Leaks and spills of products do not necessarily indicate the potential spill size, however the accuracy of stock monitoring techniques is critical to detecting leaks at an early stage. It follows that a larger quantity of product may leak to soil and groundwater from a long running undetected pipe work leak than from a catastrophic failure of an underground tank. Thus, it's very important to that proper stock management techniques are implemented prior to the operation of the service station.

Losses of product are often indicated by stock reconciliation systems, upon investigation it may be determined that losses are not caused by leaks. Dispenser meters should be checked periodically and other sources of loss (e.g. theft, faulty gauge probes etc.) should be considered. The elimination of apparent losses should improve business, performance and improve the leak detection capacity of the systems in use.

8. 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/consultant will need to monitor or audit the site throughout all phases of the development to ensure that the EMP is fully implemented and complied with. The EMP caters for all project phases, but will need to be reviewed during all phases of project, especially when revisions are made to the project development plans.

The Environmental Management Plan should be used as an on-site tool during all phases of the development. Parties responsible for contravention of the EMP should be held responsible 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 3 years from the issue date of the environmental clearance.