ENVIRONMENTAL MANAGEMENT PLAN (EMP) FOR THE OPERATION OF THE EXISTING HENADAVA SERVICE STATION IN KATUTURA, WINDHOEK, KHOMAS REGION

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1.INTRODUCTION

Puma Energy Namibia Pty (Ltd) intends to regularize the operation of existing Henadava Service Station in accordance with the Environmental Management Act No. 7 of 2007, which specifies that the construction and operations of a fuel retailing facility requires an Environmental Impact Assessment (EIA) and an Environmental Clearance Certificate (ECC). Henadava service Station was established before the EMA (2007) came into force, hence it has been operating without an ECC. It is on basis of the above that Nam Geo-Enviro Solutions has been appointed by Puma Energy Namibia to compile an Environmental Management Plan (EMP) and apply for the ECC for the continuous operations of Henadava service station. Nunao Trading CC t/a Henadava Fuel Center is the current general dealer of Henadava service station.

The Environmental Management Plan (EMP) is an on-site working document developed to ensure that the project is implemented in an environmentally sustainable manner, where all contractors and subcontractors, including consultants, understand the potential environmental impacts arising from the project and take appropriate actions to properly manage them. The EMP outlines the roles and responsibilities of the key personnel and contractors involved in the project.

This EMP is developed specifically as a managing tool for the operation of Henadava Service Station. All Contractors and sub-Contractors taking part in this should be made aware of the contents of the EMP.

2.OBJECTIVES

The environmental management plan (EMP) aims to take a pro-active route by addressing potential impacts before they occur. The objectives of the EMP are, therefore:

- To outline mitigation measures for managing environmental and socio-economic impacts associated with the project.
- Provide a framework for implementing the management actions for operational and possible decommissioning phases.
- Outline responsibilities and roles of Puma Energy Namibia Pty (Ltd) and its contractors in managing the environment.
- To enhance the project Compliance with all applicable laws, regulations, and standards for environmental protection.
- To protect the natural environment from the project's adverse impacts.
- Promote and encourage good environmental management practices.

3. PROJECT ACTIVITIES

This EMP covers activities in the operation and possible decommissioning phase. The activities associated with these phases are listed in the table below:

Table 1: Activities associated with the project.

OPERATIONAL PHASE	DECOMMISSIONING PHASE
• Fuel distribution • Off-loading of fuel • Dispensing of fuel into vehicles • Corrective Maintenance (Replacing of non-functioning equipment)	• Removal of infrastructures • Transportation off-site • Site rehabilitation

4.CURRENT FUEL STORAGE DETAILS ON SITE

The installations at the service station constitutes of five (5) fuel underground storage tanks, of which three are ULP 95 (petrol) with a capacity of 23000L each, one 50ppm (diesel) with a capacity of 14000L and one illuminating paraffin tank (LPG) with a capacity of 4500L.

5.DESCRIPTION OF RECEIVING ENVIRONMENT

This section will provide an overview of the existing biophysical environment of the project site through the analysis of baseline data of the existing natural and socio-economic environment. The project site is situated in a residential area, along the Independence Avenue road in Katutura.

The summary of biophysical and social-economic information are summarised below

Climate

Climate has a major influence on all aspects of life. In Namibia climatic features vary from place to place which makes the features and utility of resources different. Windhoek has a hot semi-arid climate according to the Koppen classification system. Generally, it has warm temperatures with hot summers and mild winters. The table below outlines details of Windhoek climatic conditions.

Table 2: Description of climatic conditions

ASPECT	DESCRIPTION
Average rainfall:	250-350 mm per year
Precipitation:	The least precipitation occurs in June and the highest occurs in January with an average of 350 mm annually.
Temperature:	Warm climate with temperatures exceeding 30ºC for most of the year apart from May, June and July. The average maximum temperatures are between 32ºC and 34ºC, whilst average minimum temperatures are around 8 ºC to 10ºC.
Humidity:	The relative humidity levels average during the least humid months of the year (i.e., September and October) is around 10-20% and the most humid month is March with 70-80% humidity. Namibia has a low humidity in general, and the lack of moisture in the air has a major impact on its climate through reduced cloud cover, low precipitation, and high rate of evaporation.
Wind and Evaporation:	There is a high evaporation which peak in the windy months of September and October. Winds are however moderate and mostly from the east, throughout the year.

(Source: Atlas of Namibia, 2003)

Topography

Windhoek is located in the central area of the plateau at about 1700 meters with the surrounding mountains reaching a height of over 2000 meters. The site is located on relatively flat land.

Ecology: Flora and Fauna

Windhoek is located within the Acacia tree and shrub savanna specifically under highland shrubland (Mendelsohn et al, 2003). The vegetation structure is classified as shrubs and low trees. Generally average plant production is high and variation in green vegetation biomass is low (5-10%). At the service station, the land is covered by concrete slab and interlocks. General animal species on site are small birds flying around the area and the birds have adapted to the urban environment overtime. Generally, the project does not affect any fauna or flora because it is sited in an urban landscape.

Hydrogeology and surface drainage

Drainage in the region is in minor ephemeral rivers in the northern direction into the Swakop River, which drains into the Atlantic Ocean at Swakopmund. At the site there are no nearby surface water bodies.

Groundwater in the area belongs to the government of the Republic of Namibia. This means that Government controls groundwater usage in this area i.e. drilling of boreholes etc.

Social

Windhoek is a capital city of Namibia, and many people migrate to the city to search for greener pastures hence resulting in population increase. According to NPC (2011), the population of the Khomas region was 325 858 which had increased from 250 262 in 2001. Annual growth rate in the region was estimated to be 3.1% which has suddenly increased from the 1.9% in 2001 (NPC Census 2011).Population growth in the region implies that more employment opportunities is required so as to cater for the growing population. 73% of people in the region, their main source of income comes from wages and salaries and only 1% from farming (NPC Census 2011).

The city is the administrative, commercial, and industrial center of Namibia. Windhoek provides a central linkage to all corners of the country and international borders, which translates to a high influx of people and vehicles hence increasing demand for fuel.

6. LEGAL FRAMEWORK: LEGISLATIONS, POLICIES AND GUIDELINES

This section outlines the regulatory framework relevant to the project. All identified crucial pieces of legislation should be adhered to, as indicated in their respective pieces of legislation.

The Environmental Management Act No. 7 of 2007 is the primary custodian of the environment which aims to; promote the sustainable management of the environment and the use of natural resources by establishing principles for decision making on matters affecting the environment; 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. However, this section does not only focus on the EMA, but also looks at other relevant legislatives.

All identified crucial pieces of legislation should be adhered to by the proponent and all contractors, using different provisions of compliance as indicated in their respective pieces of legislation.

The table below outlines the legal frameworks relevant to the project

Table 3: Regulatory framework relevant to the project

LEGISLATION	RELEVANT PROVISION	TYPE OF REQUIREMENT
Namibian Constitution First Amendment Act 34 of 1998	- "The State shall actively promote and maintain the welfare of the people by adopting policies that are aimed at maintaining ecosystems, essential ecological processes, and the biological diversity of Namibia. -Article 16(1) guarantees all persons the right to property, to acquire, own and dispose of property, alone or in association with others and to bequeath such property. -It further promotes the sustainable utilisation of living natural resources basis for the benefit of all Namibians, both present and future." (Article 95(I)).	-The constitution requires sustainable utilisation of natural resources basis for the benefit of all Namibians, both present and future." (Article 95(I)). -Through implementation of the EMP, Puma Energy Namibia should ensure conformity to the constitution in terms of environmental management and sustainability.

Environmental Management Act 7 of 2007	-Requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27). -Requires adequate public participation during the environmental assessment process for interested and affected parties to voice their opinions about a project (Section 2(b-c)). -According to Section 5(4) a person may not discard waste as defined in Section 5(1)(b) in any way other than at a disposal site declared by the Minister of Environment, Forestry and Tourism or in a manner prescribed by the Minister.	-This Act and its regulations should inform and guide the environmental assessment process. -The project proponent should ensure that all provisions of the EMP are implemented, and regular environmental monitoring and evaluations should be conducted by independent consultants.
EMA Regulations (2012)	-Details projects which cannot be undertaken without an ECC. -Details requirements for public consultation within a given environmental assessment process.	-This project is listed under activities which cannot be undertaken without an ECC, thus this EMP is compiled for the application of the ECC for the existing Henadava service station.
Pollution and Waste Management Bill (draft)	-This bill defines pollution and the different types of pollution. It also points out how the Government intends to regulate the different types of pollution to maintain a clean and safe environment. -The bill also describes how waste should be managed to reduce environmental pollution. Failure to comply with the requirements is considered an offense and is punishable.	-The project should be executed in harmony with the requirements of the act to reduce negative impacts on the surrounding environment from waste. -A waste management strategy that follows recycling, reuse and reducing should be commissioned throughout the project activities. -All waste should be handled by qualified waste handling contractors and disposed of at approved landfill.

South African National Standards SANS 10089-3	-Part 3: The installation of underground storage tanks, pumps/dispensers and pipe work at service stations and consumer installations is stated in SANS 10089-3.	-Service stations should be constructed according to the SANS standards.
Soil Conservation Act 76 of 1969	-This act makes provision for combating and prevention of soil erosion, it promotes the conservation, protection and improvement of the soil, vegetation, sources, and resources of the Republic of Namibia.	-Service stations are mainly associated with spillages which can end up contaminating the soil. This document aims at guiding the proponent during operation and perhaps decommissioning to prevent soil erosion and contamination of the soil.
Atmospheric Pollution Prevention Ordinance 11 of 1976	-This regulation sets out principles for the prevention of the pollution of the atmosphere and for matters incidental there to. Part III of the Act sets out regulations pertaining to atmospheric pollution by smoke. While preventative measures for dust atmospheric pollution are outlined in Part IV and Part V outlines provisions for Atmospheric pollution by gases emitted by vehicles. -The Act requires that there is a need to register a controlled area with certificate to operate air polluting activities. The retail license covers all elements and requirements of this Act.	-A retail license from the Ministry of Mines and Energy should be Acquired.
Water Act 54 of 1956	-The Water Resources Management Act 24 of 2004 is presently without regulations;	-Section 21(2) stipulates that purified effluent is to be returned as close as possible to the point of abstraction of the original water.

	therefore, the Water Act No 54 of 1956 is still in force: -A permit application in terms of Sections 21(1) and 21(2) of the Water Act is required for the disposal of industrial or domestic wastewater and effluent. -Prohibits the pollution of underground and surface water bodies (S23 (1). -Liability of clean-up costs after closure/ abandonment of an activity (S23 (2)). -Protection from the surface and underground water pollution	-An approved waste handling contractor should collect water in the oil and water separator pits. -No wastewater should be disposed of into the environment.
Labour Act (No 11 of 2007) in conjunction with Regulation 156, 'Regulations Relating to the Health and Safety of Employees at work'.	-135 (f): "the steps to be taken by the owners of premises used or intended for use as factories or places where machinery is used, or by occupiers of such premises or by users of machinery about the structure of such buildings of otherwise to prevent or extinguish fires, and to ensure the safety in the event of a fire, of persons in such building;" (Ministry of Labour and Social Welfare). -This act emphasizes and regulates basic terms and conditions of employment, it guarantees prospective health, safety and welfare of employees and protects employees from unfair labour practices.	-As a requirement on site, a Safety and Health representative should be appointed. -The employer shall report all incidents occurring on site to the Ministry and accordance to the regulations. -The proponent should ensure securing a safe environment and preserving the health and welfare of employees at work. This will include applying appropriate hazard management plans and enforcing Occupational Health and Safety (OHS) enforcement by contractors.
Public Health and Environmental Act, 2015	-A person who intends to conduct on a premises activities which generate special, industrial hazardous or infectious waste must be registered for that purpose with the local authority concerned.	-The service station must be registered with City of Windhoek for a certificate of fitness.

	(3) A person or local authority engaged in activities contemplated in subsection (1) or (2) must ensure that the waste generated on the premises concerned is kept and stored (a) under conditions that causes no harm to human health or damage to the environment; and (b) In accordance with applicable laws. (4) All waste contemplated in this section must be stored in approved containers and for the maximum period determined by the head of health services or the chief health officer.	
Petroleum Products and Energy Act 13 of 1990	-The Act requires that for the operation of the service station, a retail license must be obtained from the relevant ministry. Adding on, the Act requires incident reporting of major spillages occurring on site for pollution control.	-The proponent is required to have a retail licence from Ministry of Mines and Energy.
Hazardous Substances Ordinance 14 of 1974 Sections 3 and 27	-Provisions for hazardous waste are amended in this act as it provides "for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances; to provide for the prohibition and control of the importation, sale, use, operation, application, modification, disposal or dumping of such substance; and to provide for matters connected therewith".	-The proponent shall separate waste at the site. -The proponent should ensure that all possible "hazardous" categorised substances and waste will be handled by a certified hazardous waste handler.

	-The Act requires that a license must be obtained for the storage and distribution of a classified hazardous substance with the relevant Authority	
Road Ordinance 1972 (Ordinance 17 0f 1972)	-Width of proclaimed roads and road reserve boundaries (S3.1) -Control of traffic during operational activities on the trunk and main roads (S27.1). -Infringements and obstructions on and interference with proclaimed roads. (S37.1) -Distance from proclaimed roads at which fences are erected (S38).	-The proponent should ensure compliance with the terms of the Road Ordinance.
Nature Conservation Ordinance 4 of 1975 with amendments and special regulations	-This ordinance prohibits "picking of indigenous plants in private nature reserves 24. (1) No person shall without the written approval of the Minister pick any indigenous plant, or any portion of an indigenous plant, in a private nature reserve: Provided that the owner of the land concerned may at any time pick any indigenous plant, other than a protected plant, on such land"	-The proponent should protect various species that have conservations status.
National Biodiversity Strategy and Action Plan (NBSAP2)	-The action plan was operationalised in a bid to make aware the critical importance of biodiversity conservation in Namibia, putting together the management of matters to do with ecosystems protection, biosafety, and biosystematics protection on both terrestrial and aquatic systems.	-The proponent should consider all associated impacts, both acute and long term, and mitigation measures should be implemented to sustain the local biodiversity.

INTERNATIONAL CONVENTIONS AND PROTOCOLS RELEVANT TO THE PROJECT

It is vital to note that there are international conventions and protocols which aim to protect the environment to which Namibia is a signatory. These various international conventions and protocols which relate to the project are listed below:

- Vienna Convention for the protection of the ozone layer, 1985.
- United nations framework convention on climate change 992.
- Convention of Biological Diversity (1992).
- African Convention on the Conservation of Nature and Natural Resources (1968)

SUSTAINABILITY PRINCIPLES RELEVANT TO THE PROJECT

Apart from the above-mentioned regulatory framework, the following sustainability principles need to be taken into consideration, particularly to achieve proper waste management and pollution control.

CRADLE TO GRAVE RESPONSIBILITY

This principle states that those who manufacture potentially harmful products should be liable for their safe production, use, and disposal. Those who initiate potentially polluting activities should be legally responsible for their commissioning, operation, and decommissioning.

PRECAUTIONARY RESPONSIBILITY

This principle states 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 causes damage to the environment must pay the costs associated with rehabilitation of damage to the environment and to human health caused by pollution, including costs for measures as are reasonably required to be implemented to prevent further environmental damage.

7. ROLES AND RESPONSIBILITIES

It is particularly important to outline the roles and responsibilities of all stakeholders to ensure that the EMP is fully implemented. The proponent should also ensure the appointment responsible personnel's such as the Environmental Control Officer, Project Manager and Healthy and Safety officer to ensure the successful implementation of the EMP.

This section describes the roles and responsibilities of the key stakeholders involved in the development, implementation, and review of the EMP for this project.

7.1 COMPETENT AUTHORITY

Ministry of Environment, Forestry and Tourism (MEFT): Department of Environmental Affairs and Ministry of Mines and Energy: Department of Petroleum affairs are the competent authorities for this project, and they are responsible for the review of the EMP and issue of the ECC.

7.2 PROPONENT

- Responsible for all financial and manpower obligations to implement this EMP.
- The proponent should delegate suitable qualified person(s) with the responsibility to ensure implementation of the EMP.
- Protect the environment and rehabilitate the environment.
- Give warnings and impose fines and penalties on the contractor if the contractor neglects to implement the EMP satisfactorily.
- Make sure that a copy of the EMP is readily available on-site and that all site staff are aware of its content.
- Appointment of all personnel responsible for the implementation of the EMP.

7.3 FUEL SUPPLIER (PUMA ENERGY NAMIBIA (Pty) Ltd)

- Comply to the cradle to grave responsibility and polluter pays principle.
- Supply fuel to the site.

7.4 APPOINTED CONTRACTOR

- The contractor is responsible for the implementation of the EMP.
- Should be aware of any environmental matters as deemed necessary by the contractor.
- The contractor shall take adequate steps to educate all members of the workforce as well as supervisory staff on the relevant environmental laws and protection requirements as described in the EMP.
- Acquire a basic understanding of the key environmental features on the site and its immediate environs.
- Make sure that a copy of the EMP is readily available on-site and that all site staff are aware of its content.

7.5 PROJECT MANAGER

- Liaising directly with the Environmental Control Officer (ECO) concerning the preparation and implementation of the EMP and meeting the conditions documented in the environmental clearance certificate.
- Bear the overall responsibility for managing the project contractors and ensuring that the environmental management requirements are met.
- Inform the contractors of the EMP and Environmental clearance certificate obligations.
- Approve all decisions regarding environmental procedures and protocols that must be followed.
- Have the authority to stop any activities in contravention with the EMP.
- In consultation with the Environmental Control Officer has the authority to issue fines for transgressions of basic conduct rules and/or contravention of the EMP.
- Maintain open and direct lines of communication between the proponent and Interested and Affected Parties (I&APs) about environmental matters.
- Attend regular site meetings and inspections where required.

7.6 ENVIRONMENTAL CONTROL OFFICER

- Required to take independent responsibility of the implementation of this EMP.
- Conduct environmental monitoring as per EMP requirements.
- Monitor the performance of the contractors and ensure compliance with the EMP.
- Maintenance, update, and review of the EMP.
- Liaison between the contractor, authorities, and other key stakeholders on all environmental concerns.
- Conducting environmental incidents investigation as well as coming up with corrective and preventative actions.
- Communicate all amendments of the EMP to the relevant stakeholders.
- Conduct biannual audits to ensure that the system for implementing the EMP is effective.

7.7 HEALTH SAFETY AND ENVIRONMENTAL OFFICER (HSEO)

- The HSEO should record and report all incidents on site.
- Ensure that safety is practiced for all activities on site.
- Prepare and implement safety procedures.
- Communicate all safety-related issues.
- Carry out any incident/accident investigations at the site
- Conduct training.
- Issuing PPE to employees.
- Conduct Safety Health and Environmental awareness inductions and at least the following topics should be covered, (the importance of complying with the relevant Namibian and International legislation, roles, and responsibilities including emergency preparedness, basic rules of conduct, the Do's, and Don'ts).

8. MANAGEMENT OF ENVIRONMENTAL IMPACTS

In this section, project potential impacts and their mitigation measures are stipulated. The proponent and all appointed contractors should ensure proper implementation of these measures.

8.1 POLLUTION MANAGEMENT

Most pollutants and hazards associated with service stations are caused by hydrocarbon fuels that are stored and handled on site. Potential hydrocarbon pollution impacts and mitigation measures are highlighted below:

1. Surface soil and water contamination

Fuel spillages and leakages are the highest risks of pollution sources of soils and surface water contaminations at service stations. This type of contamination usually occurs during dispensing fuel into customers vehicles and when fuel tanker trucks offload fuel into the underground storage tanks. Over-filling of tanks, leaking and pipe bursts are the cause of most surface spillages.

Surface spillages if not contained can contaminate the surface soils. Soils contaminated by petroleum contaminants can affect soil health and harm soil microorganisms, reducing their number and activity. Surface spills can also contaminate surface water bodies as they can be washed into rivers and streams by floods and rain, thus can result in further underground water contamination.

Mitigation measures

- proper training of staff on fuel storage and handling.
- There should be a spill containment slab at forecourt and filler Points, covering the surfaces where fuels are handled to prevent groundwater pollution.
- Spillage control procedures must be in place according to SANS 10089-1:2008 and SANS 100131-2 standards, or better.
- contaminated soil shall be collected in a holding tray or drum, and which will then disposed at a licensed hazardous waste site
- Spillages on site must be cleaned up immediately and if the spill is more than 200L it must be reported to the Ministry of Mines and Energy.
- An emergency response plan to give guidelines on spillages or leakages.
- All waste must be disposed of at approved disposal sites.
- No burial of any waste or burning should be done on-site.
- Sand buckets should be available on site to clean up minor oil spills.

- Standby oil cleaners and absorbents should be available during the decommission stage.
- All operational surfaces at the fuel retail facility must be installed with spill containment areas as per the relevant SANS standards (or better).

2. Underground contamination

Underground fuel storage tanks and reticulation pipelines that carry fuel to the dispensing pumps have a risk of leaking, thereby polluting underground water. Oil spills and leakages may infiltrate underground, causing underground water contamination in the absence of a concrete containment slab.

Mitigation measures

- proper training of staff and installation of suitable containment structures.
- Install oil interception system.
- Install isolating surface drainage system.
- There should be a spill containment slab at forecourt and filler Points, covering the surfaces where fuels are handled to prevent groundwater pollution.
- Storm water drainage system should be installed.
- Effluent testing should be done periodically to measure the quality of water from the oil and water separator to ensure that no contamination is being done to the environment.
- The condition of the fuel reticulation system should be checked regularly and repaired to prevent leakages.
- Monitoring wells should be installed to monitor possible oil leakages from underground tanks.
- All waste must be disposed of on approved disposal sites.
- All operational surfaces at the fuel retail facility must be installed with spill containment areas as per the relevant SANS standards (or better).

3. Hydrocarbon vapors and odors

Hydrocarbon vapors can be released into the atmosphere when dispensing fuel into the customers vehicles and when tanker trucks are offloading fuel. Vapor contains elements such as benzene which is highly carcinogenic and may affect employees especially the fuel attendants due to prolonged exposure. Immediate atmospheric environment may be affected by fuel odors during refilling process.

Mitigation measures

- All venting systems and procedures should be designed according to SANS standards and placed in a sensible manner.
- Vent pipes should be placed in such a manner as to prevent impact on potential receptors.
- Vehicle idling time should be minimized by putting up educative signs.

8.2 WASTE MANAGEMENT

Waste management involves the regular collection, transportation as well as processing and disposal or recycling and monitoring of different types of waste materials. Different types of waste can be generated at the service station such as general waste and hazardous waste.

1.General waste

Henadava service station generates waste mainly from the mini grocer and fast food shop and the kitchen, therefore most of the general waste produced on site is domestic waste. Waste is generally in form of food leftovers, plastics, cigarette butts, waste dumped on site by motorists fuelling up. However, waste can also be in the form of human waste.

Mitigation measures

- Waste disposal systems should be implemented on site.
- Strictly no burning of waste on the site.
- Place whether and scavenger proof bins around the site.
- Contaminated wastes in the form of soil, litter, and other material must be disposed of at an appropriate disposal site at the nearest town.
- Good housekeeping should be maintained.

- Waste must be categorized by the contractor and disposed of in a suitable manner into different waste streams.
- No wastewater shall be disposed to soil.
- Waste should be disposed of at an authorized designated area.
- Proper ablution facility should be constructed on site.

2. Hazardous waste

Hazardous wastes on site are usually minor oil spills on the surface. Spillages might occur during delivery to the tanks, overfilling of the tanks and vehicles Hazardous waste should be separated from general waste and kept in hazardous waste bins to be discarded at approved disposal sites or should be handled by certified contractors

Mitigation measures

- Proper training of staff and the installation of suitable containment slab around the pumps and the filling points.
- Proper monitoring of the product levels in the tanks.
- All spills must be cleaned up immediately and if spill is more than 200 L, it must be reported to the Ministry of Mines and Energy.
- The presence of an emergency response plan and suitable equipment is advised, to react to any spillage or leakages properly and efficiently.
- Sand buckets should be available on the forecourt.
- Spill containment slab must be installed.
- Hazardous waste bins should be available on site to place contaminated waste.
- Equipment and materials to deal with spill clean-up such as spill kit must be readily available on site.
- Proper drainage, storm water free from pollution must be directed to a municipality drainage and contaminated water to the oil and water separator pit.

8.3 HEALTH AND SAFETY MANAGEMENT

The operations of fuel retail facility can cause serious health and safety risks to workers on site. Occupational exposures are normally related to the dermal contact with fuels and inhalation of fuel vapours during handling of such products, fire, and occupational stress.

1.Risk of fire explosion

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 or any source of fire ignition is to be allowed at the service station during any of the two phases (operational and decommissioning). Puma Energy Namibia 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 always ensure sufficient fire-fighting equipment on site.

Mitigation measures

- Sufficient water should be made available on site for firefighting purposes.
- Ensure that all fire-fighting devices are in good working order.
- Regular inspections and services should be carried out to inspect and test firefighting equipment.
- All personnel must be sensitised about fire protection measures and good housekeeping such as the removal of flammable materials.
- All fire precautions and fire control at the fuel retail facility must be in accordance with SANS 10089-1:1999, or better.
- The Emergency Response Plan should be implemented.
- Signs for no smoking and mobiles, should be displayed on site.
- Fire guards must also be constructed at the site to prevent the spread of fires.
- Fuel tanks should be established away from potential neighbouring fire points.
- All fire precautions and fire control at the service station must be in accordance with SANS 10089-1:2008, or better.

2. Occupational health and safety

The operations of fuel retail facility can cause serious health and safety risks to workers on site. Occupational exposures are normally related to the dermal contact with fuels and inhalation of fuel vapours during handling of such products, fire, and occupational stress.

Mitigation measures

- Comply with all Health and Safety standards specified in the Labour Act.
- Train workers how to use the equipment safely and effectively
- Training on occupational health and safety.
- Safety talks to be done every day before the commencement of work.
- Emergency response plans should be present.
- Safety officer to be stationed at the site.
- Formulation of a safety health and environment workers committee.
- A fully stocked first aid kit should permanently be available on site as well as an adequately trained staff member in a position to administer first aid.
- All workers should have access to the appropriate Personal Protective Equipment (helmets, gloves, respirators, work suits, earplugs, safety goggles, and safety shoes where applicable).
- Proper ablution facility should be used and clearly marked for males and females.
- Use dust suppression measures.
- Maintain good housekeeping.
- Reduce noise exposure by isolating noisy equipment and rotate tasks.
- Conduct Hazard identification and risk assessments.
- Any leakage/spillage shall be immediately attended and provision of urgent cleaning.
- Work area should be monitored to maintain work environment free from any hazards.
- Provisions of immediate accident/incident reporting and investigation.
- Safety posters and signages should be exhibited at conspicuous places.

3. Risk and spread of Covid-19

Covid-19 is an infectious disease caused by a newly discovered Corona virus and it has spread worldwide. The virus that causes Covid-19 is mainly transmitted through respiratory droplets generated when an infected person coughs, sneezes, or exhales. Covid-19 can be conducted by touching the eyes, nose, or mouth after touching a contaminated surface. The symptoms of this virus are mild to moderate respiratory illness such as fever, dry cough, and fatigue.

Mitigation measures

- Frequent hand washing or disinfection with alcohol-based hand sanitizer.
- Respiratory hygiene such as covering coughs.
- Physical distancing of at least 1 metre or more according to the national recommendations.
- Wearing of masks.
- Regular environmental cleaning and disinfection and limiting unnecessary travel.
- Seek medical care when experiencing fever, dry cough, and difficulty breathing.
- Personnel who are unwell or develop the symptoms should stay home, self-isolate and contact medical attention.
- Avoid touching your eyes, nose, or mouth if your hands are not clean.
- Avoid close contact with people who have symptoms of coronavirus.
- There should be a digital thermometer for a temperature check and a record must be kept.
- All Covid-19 national and safety protocols should be adhered

4. Risk and spread of HIV and AIDS

The spread of HIV/AIDS may occur during the project operational phase. The movement of different people to the site can promote anti-social behaviours like alcohol abuse, drug abuse and prostitution. Workers may be given little time to visit their partners, as a result they may find new partners from the local area. Condoms may also be limited or not provided at the workplace.

Mitigation measures

- Allocate time for workers to visit their families.
- Sensitization campaign to the staff on HIV/AIDS and other STDs.
- Free distribution of condoms on site.
- Free counselling to those already affected by the virus.

8.4 CUMULATIVE IMPACTS

These are the impacts on the environment, which result from the accumulation of other impacts which might occur during the operational phase. Fuel is going to be off-loaded from tanker trucks which can result in the release of hydrocarbon vapours, which have an impact of reducing the air quality and causing fires and explosions. If hydrocarbon vapours is released in the atmosphere, it can also cause global warming, reduction of photosynthesis of plants and cancer.

Mitigation measures

- All possible sources of ignition in the entire area should be eliminated.
- Sufficient water should always be available in case of fire for firefighting purposes.
- Vent pipes should be placed in such a manner as to prevent impact on potential receptors.
- Regular check tests.
- No burial of any waste or burning should be done on-site, all waste must be disposed of on approved disposal sites.
- Waste should be disposed of as hazardous waste at a licensed facility by an authorized hazardous waste handler.

8.5 POSITIVE IMPACTS

1. Employment creation

Employment will be created during the lifespan of the project. The types of jobs will range from skilled, semi-skilled and unskilled. This will improve the wealth and livelihood of people.

Enhancement measures

- levels in future. Employ locals in all casual labour in both phases.
- Gender equality, transparency should be ensured when recruiting.
- When recruiting, the responsible contractor should ensure gender equality.
- Implementation of training programs to train the unskilled workers for them to enhance their performances and to gain more knowledge that they might demonstrate at other

2. Generation of revenue

According to the law of Namibia, operating companies are to pay taxes. It is a requirement that the proponent will pay tax to the government hence this will benefit the nation at large given that money generated from taxes is diverted to the public by the government.

Enhancement measures

- Continuous payment of taxes as regulated in the Namibian laws.

3. Local development and improvement of general welfare

The service station can pave way for development of the area. Project investors are believed to bring development to communities where they are operating as a form of enhancing social responsibility. The project has a high probability of improving the general welfare for the local population. The locals will benefit during the life span of the project and the extent of benefiting can reach to the regional scale.

Enhancement measures

- First preference is to be given to the locals during employment.
- The proponent is to be engaged in community projects.
- The proponent should give employees market related salaries; this will improve the lives of the employees.
- The proponent should be engaged in community development programmes

4. Accessibility of fuel

The community people will have access to fuel and no need to travel long distance to fill up their vehicles. The probability of fuel supply is going to be definite; the severity will be greatly beneficial, and the overall significance will be very high.

Enhancement measures

- Maintain a consistent supply of the fuel to site.

9. ENVIRONMENTAL MONITORING

Environmental monitoring provides a delivery mechanism to address the adverse environmental impacts of a project during its lifespan and to introduce standards of good practice to be adopted. The aim of environmental monitoring is to manage and minimize the impact a project's activities have on the environment, either to ensure compliance with laws and regulations or to mitigate risks of harmful effects on the natural environment and protect the health and safety of human beings

The critical potential project impacts that can have adverse impacts on the environment include surface and underground contamination, hydrocarbon vapors and odors, general waste, hazardous waste, risk of fire explosion, occupational health and safety, risk and spread of Covid 19 and risk of HIV and AIDS.

The suggested monitoring details are outlined in the table below.

Table 3: Monitoring of sensitive impacts

IMPACT	TYPE OF MONITORING	MONITORING FREQUENCY
Surface soil and water contamination	• Proper spill clean-up. • Fuel reconciliation	Daily
Underground contamination	• Vacuum testing on underground fuel tanks. • Inspection on underground possible leakages. • Monitoring of the oil/water separator	Regularly
Hydrocarbon vapors and odors	• Proper PPE always. • Air quality tests	Daily Bi-annually
General waste	• Disposal of waste bins.	Daily
Hazardous waste	• Site inspections of oil spills. • Proper spill clean-up. • Site inspection of housekeeping.	Daily Regularly

	• Proper training of fuel attendants.	
Risk of fire explosion	• Regular testing and servicing of firefighting equipment.	Regularly
Occupational health and safety	• Conducting hazard and risk Assessments. • Safety procedures evaluation. • Health and safety incident monitoring. • Security inspection on site. • Regular supply of appropriate PPE to employees.	Daily and when necessitated
Risk and spread of Covid 19	• Temperature testing. • Monitor social distancing. • Monitor wearing of face masks.	Daily and when necessitated

As stipulated in the EMA no.7 of 2007 and its Regulations of 2012, biannual monitoring and evaluation should be conducted by an independent EAP to monitor and evaluate the environmental performance of the project. Target of improvements should be established and monitored.

10. DECOMMISSIONING AND SITE CLOSURE

It is necessary to consider the environmental impacts of decommissioning of any development, even though the decommissioning phase of the project is not known yet. Decommissioning phase is considered as a separate activity which should be dealt with on its own. It would therefore be addressed in an EIA to be conducted prior to the site closure.

During the decommissioning phase of the project, the following recommendations should be considered:

- The proponent should develop a site closure plan to be updated on an annual basis at least 5 years or more prior to envisaged decommissioning.
- The closure plan should outline rehabilitation methods for the site closure.
- The proponent should consider specialist input to provide direction on the closure plan to ensure best practice.
- Various stakeholders should be engaged as early as possible in the closure planning to ensure that their inputs are considered.
- The environmental commissioner should grant a successful rehabilitation for decommissioning to be considered complete.

Other recommendations are listed below:

- Removing of equipment on site.
- Removal of associated infrastructures.
- Rehabilitation of all areas impacted by the associated infrastructures.
- Planting of vegetation on site.

11. CONCLUSION

This EMP is considered sufficient for continuous operations of the existing Henadava service station. Proper implementation of this EMP will help to minimise adverse impacts on the environment and Where impacts occur, immediate action must be taken to reduce the escalation of effects associated with these impacts.

The Environmental Management Plan should be used as an on-site reference document during the operation phase. Puma Energy Namibia and appointed contractors should take all necessary actions to implement the EMP to minimise adverse impacts on the environment. All Contractors and sub-Contractors taking part in the project should be made aware of the content of the EMP and plan their activities accordingly in an environmentally sound manner.

Environmental monitoring should be conducted to determine environmental performance of the project. Evaluation of monitoring processes should be reviewed regularly to enhance performance. Parties responsible for the transgression of the EMP should be held responsible on any non-compliance, and rehabilitation should be enforced.

12. REFERENCES

I. Government of Namibia. (2008). Government Gazette of the Republic of Namibia. Government notice No.1: Regulations for Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA)-Windhoek.

II. Government of Namibia. (2012). Environmental Management Act no. 7 of 2007. Windhoek: Directorate of Environmental Affairs, Ministry of Environment and Tourism.

III. Guide to the Environmental Management Act No 7 of 2007(2008). Windhoek, Namibia: Ministry of Environment and Tourism.

IV. Schlüter, T. (2006). Namibia. *Geological Atlas of Africa: With Notes on Stratigraphy, Tectonics, Economic Geology, Geohazards and Geosites of Each Country*, 172-175