ENVIRONMENTAL MANAGEMENT PLAN

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FOR THE OPERATION OF ECO-FUEL INVESTMENT FUEL CONSUMER INSTALLATION AND STORAGE FACILITY AT OSHALI VILLAGE, OSHIKOTO REGION

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Nam Geo-Enviro Solutions

ENVIRONMENTAL AUTHORIZATION INFORMATION

PROJECT:	**FOR THE OPERATION OF ECO-FUEL INVESTMENT FUEL CONSUMER INSTALLATION AND STORAGE FACILITY AT OSHALI VILLAGE, OSHIKOTO REGION**	
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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACRONYMS

ACRONYM	MEANING
EIA	Environmental Impact Assessment
EAP	Environmental Assessment Practitioner
EMP	Environmental Management Plan
ISO	International Standard Organization
SANS	Africa National Standard

CHAPTER ONE: BACKGROUND

Eco-fuel Investment cc intends to operate a fuel consumer installation and storage facility at Oshali village in Oshikoto region. Eco-Fuel purpose to use the temporary fuel installations as storage and source of fuel supply for their trucks, not for public retail purpose. The temporary fuel installation will consist of two (2) self-bunded fuel storage tanks combined capacity of 126340 litres (126.34 cubic meters).

The document will be used as a basis for managing, mitigating and monitoring the environmental impacts associated with the operation and decommissioning of the facility.

According to the Environmental Management Act (2007) and its Regulations (2012) this development requires an Environmental Clearance Certificates as specified in the listed activities below in the table.

Table 1: Listed Activities as per EMA regulations (2012)

ACTIVITY	RELEVANT SECTIONS
Hazardous substance treatment, handling and storage	-9.4 The storage and handling of a dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 cubic meters at any one location.

In respect of the operations of the fuel consumer installation and storage facility, Nam Geo-Enviro Solution cc has been consulted by Eco-fuel Investment CC to develop an Environmental Management Plan (EMP) for the operations of a fuel consumer installation storage facility at Oshali village and to apply for an Environmental Clearance

Certificate with the Directorate of Environmental Affairs under the Ministry of Environment and Tourism-Namibia.

1.1 PROJECT ACTIVITIES

The project activities will involve:

- Off-loading of fuel into tank by road tanker truck
- Dispensing of fuel into trucks (not for retail purposes)

1.2 BASIC ASSESEMENT OF THE SITE

The proposed site was already cleared and fenced off (see **figure 1**) and half of the site was compacted, the total footprint area size of approximately 8961.99m^2.

Fuel on site will be stored in two mobile self bunded (double wall) fuel tanks with a capacity of 63170 litres each.

The two mobile units comprise of a tank and pump as a unit, they are made according to UL 142, Steel Aboveground Tanks for Flammable and Combustible Liquids and ULC-S601, Shop Fabricated Steel (www.petroind.com). see figure below of portable units.

Figure 1: The site view with the two mobile fuel units

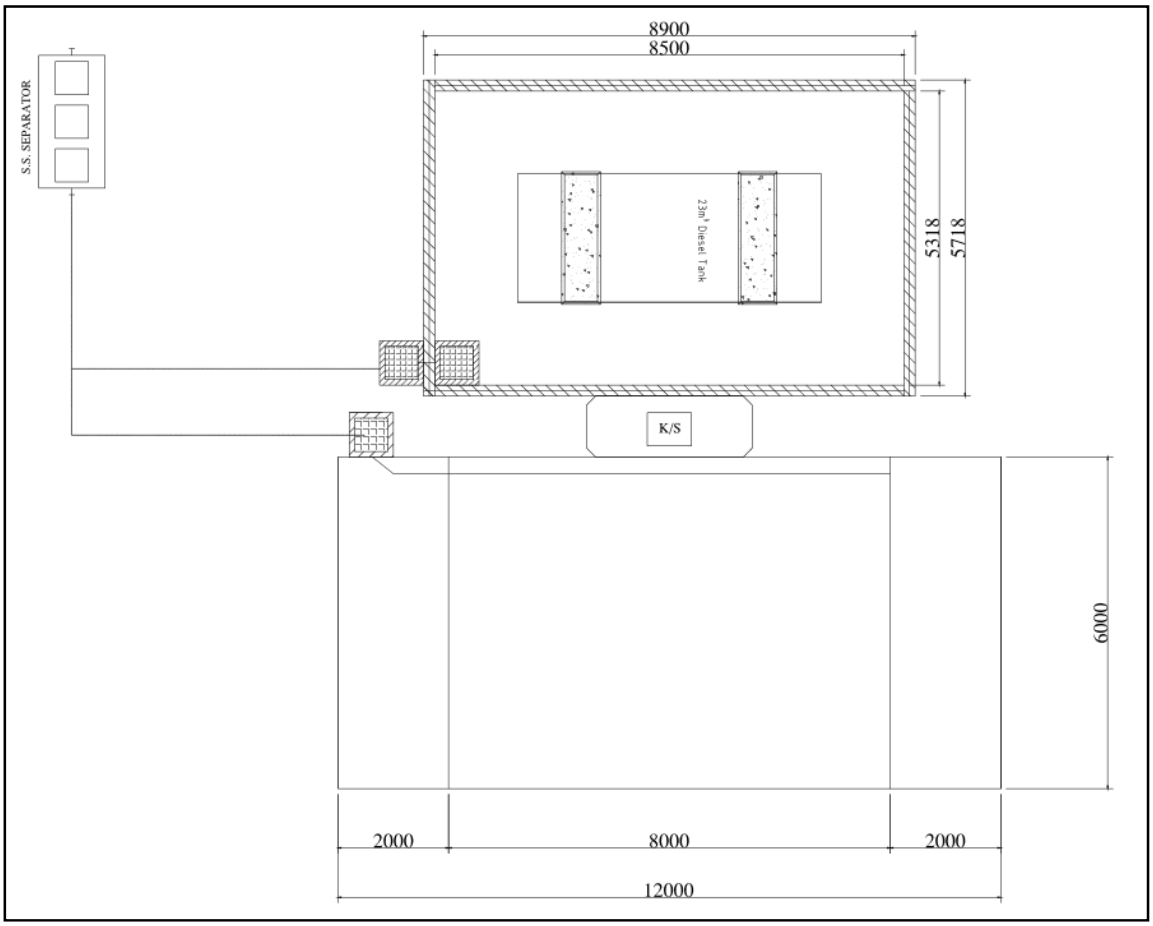

Figure 2: Design of installation set-up, with concrete floor at dispensing areas

1.2.1 Vegetation and Animals

The proposed site is devoid of vegetation, at the time of assessment the site was already cleared and compacted. (see figure 1 above)

No animals were observed on site during the assessment. The only animals expected in the area are cattle and goats.

1.2.2 Neighbours to the site

Since the site will handle hazardous substances it was essential to identify neighbours that can possibly be affected from the proposed operations. See Appendix 2, neighbours concern

Table 2: The neighbouring places to the fuel consumer installation and storage facility.

NORTH Immediate to north is an corridor than a vacant plot marked off with poles. Further north there is a railway line.	EAST Adjacent to the site is an Oshana, than further east approximately 350m and 200 there are homesteads.
SOUTH There is B1 road, further south-east and south west there are homesteads approximately 350m and 400m respectively.	WEST There is an open area and further west there is a homestead about 300m away.

CHAPTER TWO: EMP AIMS AND OBJECTIVES

The environmental management plan (EMP) aims to take a pro-active route by addressing possible problems before they occur. The objectives of this EMP are therefore;

- To outline mitigation measures in order to manage environmental and socio-economic impacts associated with the project
- Provide a framework for implementing the management actions for operational and possible decommissioning phases of the activities associated with the development of the proposed fuel consumer installation and storage facility
- To ensure that the project will be developed and operated according to the stipulated requirements of Namibia Environmental Management Act (No 7 of 2007)
- To ensure that the project will comply with relevant environmental legislations of Namibia and other requirements

throughout its operational phase and possibly the decommissioning phase.

The EMP is aimed to ensure that all contractors and sub-contractors involved in any of the phases should be made aware of the contents of the EMP so that they can plan their activities accordingly in an environmental sound manner.

CHAPTER THREE: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

Legislations are used as guiding tools during the development of an EMP. The proponent will be required to abide to different policies, laws, regulation relating to the project. 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 establish the Sustainable Development Advisory Council
- To provide for the appointment of the Environmental Commissioner and environmental officers
- 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 the focal point of this section is not only on the EMA, but also s at other relevant legislatives. **Table 3** below indicate the relevant legislatives related to the project.

Table 3: Relevant legislation and policies for the fuel consumer installation and storage facility

Aspect	Legislation	Relevant Provisions	Relevance to the Project
The Constitution	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. It further promotes the sustainable utilisation of living natural resources basis for the benefit of all Namibians, both present and future." (Article 95(I)).	• Through implementation of the environmental management plan, the proposed operations will ensure conformity to the constitution in terms of environmental management and sustainability.
Environmental	Environmental Management Act 7 of 2007	• Requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27). • 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 and Tourism or in a manner	• This Act and its regulations should inform and guide this EIA process. • The proponent is trying to get an ECC and implementing the Environmental Management Plan.

		prescribed by the Minister.	
	Pollution and Waste Management Bill	• 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 offence and punishable.	• The project should be conducted in a manner which is advised by the bill so as to minimize the generation of waste at the site. • A waste management strategy that follows recycling, reuse and reducing will be commissioned throughout the operations.
	Soil Conservation Act 76 of 1969	• This acts makes provision for combating and for the prevention of soil erosion, it promotes the conservation, protection and improvement of the soil, vegetation, sources and resources of the Republic of Namibia.	• Fuel storage facilities are mainly associated with spillages which can end up contaminating soil. This document aims at guiding the proponent during operation and perhaps decommissioning in order to

			prevent soil erosion and contamination during operation.
	Hazardous Substance Ordinance 14 of 1974	• 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 site. • The proponent shall ensure that all possible "hazardous" categorised substances and waste shall be handled by a certified hazardous waste handler.
	Atmospheric Pollution Prevention Ordinance 11 of 1976;	• The Act requires that there is need to register a controlled area with certificate to operate air polluting activities. The retail license covers all elements and requirements of this Act.	• The proponent have already a wholesaler license from the Ministry of Mines and Energy

Water	Water Act 54 of 1956	• The Water Resources Management Act 24 of 2004 is presently without regulations; 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 surface and underground water pollution	• Fuel storage facilities are associated with spillages which can contaminate ground water or surface water thus this act will be of significance especially during operation phase.
Health and Safety	Labour Act (No 11 of 2007) in conjunction with Regulation 156, 'Regulations Relating to the Health and Safety	• 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,	• The proponent will be obliged to create a safe working environment for the employees. This will include applying appropriate hazard management plans and enforcing Occupational

	of Employees at work'.	and to ensure the safety in the event of 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.	Health and Safety (OHS) management systems to 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 • (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 • under conditions that causes no harm to human health or damage to the environment; and	• The commercial fuel site shall register to get a Certificate of Fitness with relevant authorities.

		○ 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.	
Oil and Gas	Petroleum Products & Energy Act (1990)	• The Act requires that for the operation of commercial fuel site a consumer license has to be obtained from the relevant ministry • Petroleum Products Regulations prohibit a person to have in possession more than 200 litres of petrol or diesel in an urban area or more than 600 litres of petrol or diesel in a rural area. • Adding on the Act requires incident reporting of major spillages occurring on site for pollution control.	• The proponent already have a wholesaler license from the Ministry of Mines and Energy

The following SANS Codes guideline standards influence the planning and management of the fuel installation site:

SANS Code	Description
SANS 10228	The identification and classification of dangerous goods for transport
SANS 10089-1.	Storage and distribution of petroleum products in above ground bulk installations
SANS 10131	Above-ground storage tanks for petroleum products
SANS 14001	Environmental management systems - Requirements with guidance for use
SANS 1518	Transport of dangerous goods, design requirements for road vehicles and portable tanks
SANS 10234	Globally harmonized system of classification and labelling of chemicals (GHS)
SANS 10263	The warehousing of dangerous goods – Part 0: General Requirements

Eco-fuel Investment CC is recommended to use the standard in its operations and installations. The following are some of the major impacts associated with the project and mitigation measures objected by the standards.

Spillages

Spillage control can be provided by remote impounding, impounding around tanks, bunding or by a combination of all three.

In both types of impounding, the impoundment area shall be protected by adequately designed systems to prevent the contamination of ground water if such a risk exists. Additionally, separator facilities shall be provided to contain any possible spillage and to prevent the spillage from leaking into any sewage drains. See figure 2 for design of installation set-up.

The protection facilities against fire hazards shall be achieved by good engineering design and construction standards. Safe operational procedures and efficient plant and equipment maintenance shall be such that it is highly unlikely that fire will break out.

Ignition sources

Any device or action that could cause a flame or spark shall not be allowed in restricted areas, unless authorized by an appropriate permit, the stipulations of which shall be strictly adhered to. Sources of ignition include but are not limited to the following: cutting and welding, electrical sparks, frictional heat or sparks, furnaces, heating equipment, hot surfaces, lightning, open flames, ovens, radiant heat, smoking, static electricity, stray currents and spontaneous ignition. Welding, cutting and similar spark-producing operations shall not be permitted within the Fuel storage facility premises without an authorized hot-work permit.

Access control

All points of entry to the site shall be planned that persons or passenger vehicles that enter or leave the fuel storage site can be observed. Unauthorized persons shall not be permitted access to site. All persons or passenger vehicles that enter or leave the fuel storage facility have to pass through the security area.

Housekeeping and vegetation

The site shall be kept free from obstructions and combustible rubbish. Vegetation that is liable to dry out and become a fire hazard shall be kept short and cuttings shall be removed.

There are some *Hyphaene petersiana* (Palm trees) on site and when the branches fall on the ground they should be picked up and the *Pechuel-loeschea leubnitziae* (Bitter bush) on site should be cleared more often in order to reduce the amount of combustible rubbish on site. Overall, this will help in reducing an intensive fire if it has to occur.

Absorbents

Absorbents are basically recommended for containing spillages. Sufficient supplies of absorbents shall be available at all times.

Safety training

Safety training shall include operational procedures, emergency procedures and safe working practices, information on specific hazards, first aid and fire-fighting, and the proper use of protective equipment such as breathing apparatus. Periodic refresher training shall be maintained.

Emergency plans (on-site and off-site)

Emergency plans shall be prepared to cover foreseeable types of emergencies, which shall cover situations that range from a small incident to one of disaster proportions where considerable assistance from outside organizations is needed. Any emergency plan shall comply with the regulations for major hazard installations as laid down in the OHS Act, 1993.

CHAPTER FOUR: ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION FRAMEWORK

4.1 ENVIRONMENTAL MANAGEMENT PLAN AND MONITORING

There is a strong need to clearly outline the roles and responsibilities of all stakeholders to ensure that the EMP is fully implemented. There is also a need for the proponent to appoint an overall responsible person (Environmental Control Officer) to ensure the successful implementation of the EMP. The Environmental Control Officer needs to have qualifications and knowledge in environmental management/sciences, and understanding of EMP administration.

Under the management actions, each action is allocated to a responsible entity to ensure that the specific action is managed and documented properly. All key role players such as contractors who will be involved must be informed about the contents of this EMP and activities to be undertaken to mitigate the potential impacts identified.

4.2 ROLES AND RESPONSIBILITIES

4.2.1 PROPONENT (ECO-FUEL INVESTMENT CC)

Overall responsible for all financial and manpower obligations to implement this EMP. The proponent is responsible for the appointment of other personnel responsible for the implementation and operation of this EMP.

4.2.2 COMPETENT AND MONITORING AUTHORITY (THE DEPARTMENT OF ENVIRONMENTAL AFFAIRS: MINISTRY OF ENVIRONMENT AND TOURISM)

Responsible for enforcing compliance with the EMA Act, its regulations and full implementation of this EMP. The competent authority also reviews biannual reports and grant ECC renewal after 3 years following an environmental Audit.

4.2.3 SITE MANAGER (SM)

Required in carrying out the overall responsibility for the implementation of the EMP to ensure that all required resources and mechanisms for environmental management are in place.

4.2.4 HEALTH SAFETY AND ENVIRONMENTAL SITE OFFICER (HSEO)

Required to take responsibility of all environmental issues (waste management) and safety of employees. The HSEO should record and report all incidents on site.

4.2.5 ENVIRONMENTAL CONTROL OFFICER (ECO)

Required to take independent responsibility of the implementation of this EMP. ECO is contracted to conduct periodic auditing of the site, compilation of all reports to be submitted to MET: DEA for renewal of the environmental clearance certificate.

4.3 MANAGEMENT OF ENVIRONMENTAL ASPECTS AND IMPACTS

Fuel storage facilities are associated with spillages which have a consequence of contaminating water sources, underground water and soil. Waste management is also among the issues which need more attention. The following guidelines give clarity on some of the issues.

4.3.1 HYDROCARBONS MANAGEMENT

If any spillage occurs, contaminated soil shall be collected in a holding tray or drum and 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.

Engen Namibia (Pty) Ltd and Eco-fuel Investment CC shall take all reasonable measures to prevent surface or groundwater pollution from the release of oils and fuels. In addition, sufficient space should be left in fuel tanks to allow fuel expansion and to prevent leakage of fuel from the tank.

4.3.2 SITE MANAGEMENT

Staff at the site and contractors should be educated and informed of their environmental obligations. Meaningful penalties for damages should be stipulated, and perpetrators should be held responsible for all transgressions. Areas outside this designated working zone shall be considered "no go" areas. Engen health and safety policies should be implemented at all time since the storage facility will get fuel from Engen.

4.3.3 STAFF MANAGEMENT

The manager must ensure that all employees have suitable personal protective equipment and are properly trained in fire fighting and first aid. Eco-fuel Investment CC will take overall responsibility on training the responsible personnel on environmental management.

4.3.4 WASTE MANAGEMENT

All waste generated on site ought to be disposed off at designated licensed disposal site. adequate bins or containers should be provided on site store any solid or liquid waste produced. Liquid wastes from the oil/water separators and other wastes should be disposed off licensed contractor. The bins and containers should be weatherproof and scavenger-proof.

4.3.5 FIRE AND SAFETY MANAGEMENT

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 later safety risks may arise.

No fire or any source of fire ignition is to be permitted near the fuel tank on site during any of the two phases (operational and decommissioning). Eco-fuel Investment CC 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 and may not be limited to fire extinguishers.

CHAPTER FIVE: IMPACT EVALUATION AND MITIGATIONS

The operational phase is the most critical component of Environmental Management because it is normally associated with several impacts. The phase comprises of the actual operation of the fuel storage tank. There will be several impacts that will occur daily or other sequential routine. The operational phase forms the basis of an Environmental Management Plan and it will be followed by the decommissioning phase. The major impacts identified by this study for the operational and probably decommissioning phase are detailed below:

5.1 DUST

Impacts	Description	Mitigation measures	Project phase	Responsibility
Dust	• Very less dust might be generated during the demolition of the concrete slab(s). • The site is compacted hence less dust will be produced during operations • The nearest homestead is to the west of the site and its 300m away, therefore the people won't be affected by the dust if there will be any produced. • Overall, the impact of the dust will be for a short period and localised • The overall environmental significance is low	• Employ dust suppression measures during decommissioning • Ensure all employees have appropriate PPE in relation to dust and vapors.	Decommissioning	• Site manager • Contractors • Appointed HSEO

5.2 IMPACT ON SOILS

Impacts	Description	Mitigation measures	Project phase	Responsibility
Impact on soil	• Half of the site is compacted • The impact on soil is expected to be localized and of low environmental significance • During the decommissioning phase, proper care must be taken when removing and disposing the fuel tanks as this can end up contaminating the soil.	• Proper care should be taken so that there is no spill that would cause soil contamination • Spill kits and absorbents should be readily available on site • Hazardous waste properly handled and sent for disposal to appropriate disposal areas • The management to maintain records of contaminated waste on a regular basis • Re surface open areas during the decommissioning stage and introduce appropriate vegetation • Proper care should be taken so that there is no spill that would cause soil contamination	Operational and decommissioning	• Eco-fuel Investment CC • Contractors • Appointed HSEO

5.3 SURFACE/GROUNDWATER CONTAMINATION

Impacts	Description	Mitigation measures	Project Phase	Responsibility
Surface/ground water contamination	• Spillages might be generated when dispensing fuel into trucks and when fuel tanker trucks are offloading fuel. • Groundwater quality can also be affected through leaching/leakage of the above ground tank	• Risks of such an impact can be lowered through proper training of staff and installation of suitable containment structures • The tank is above ground and is surrounded bund wall. • There should be a concrete slab at the filler and loading points leading to an oil and water separator. • The site should have an oil interceptor system on site linked to an oil and water separator pit • Proper toilet facilities • Empty containers of chemicals should not be	Operation	• Site manager • Contractors • Appointed HSEO

		dumped anywhere, all the garbage should be collected by the licensed garbage collectors • Proper monitoring of the product levels in the tanks must take place to eliminate overfilling • Equipment and materials to deal with spill clean-up must be readily available on site and staff must be trained in the usage of these products • Spillage control procedures must be in place according to SANS 10089-1:2008 and SANS 100131-2 standards, or better • Proper training and induction of operators must be conducted		

		• Any spillage of more than 200 litres must be reported to the relevant authorities and remediation instituted (refer to section 49 of the Petroleum Products and Energy Act, 1990 (Act No. 13 of 1990) • An emergency response plan to give guidelines on spillages or leakages		
Surface/ground water contamination	• During tank removal, leakages/spillages might happen which can consequently affect ground water quality.	• During decommissioning process, there is need to ensure that there is a qualified hazardous waste management contractor • Pollution studies have to be undertaken in case of possible pollution or groundwater contamination	Decommissioning	• Site manager • Contractors • Appointed HSEO

5.4 AIR QUALITY

Impacts	Description	Mitigation measures	Project Phase	Responsibility
Air quality	• Hydrocarbon vapour can be released into the atmosphere when dispensing fuel for trucks and when tanker trucks are offloading fuel. • Hydrocarbons are a class of compounds primarily composed of carbon and hydrogen and there are major components of oil, natural gas and pesticides. These substances contribute to the greenhouse effect and global warming,	• Trucks idling time shall be minimized by putting up educative signs • All venting systems and procedures have to be designed according to SANS standards and placed in a sensible manner • Regular check tests and audits • Employees working with fuel must be provided with proper Personal Protective Equipment (PPE)	Operation	• Eco-fuel Investment CC • Site manager • Appointed HSEO

	depletion of the ozone, increase occurrences of cancer, respiratory disorders and reduce the photosynthetic ability of plants • Noxious smell will be experienced during the offloading and dispensing of fuel only causing the effect to be temporal			
Air Quality	• Hydrocarbons can be realized during removal of tanks which can consequently affect the air quality.	Ensure all employees have appropriate PPE in relation to dust and vapors	Decommissioning	• Eco-fuel Investment CC • Site manager • Appointed HSEO

5.5 FIRE AND EXPLOSION HAZARD

Impacts	Description	Mitigation measures	Project Phase	Responsibility
Fire and Explosion Hazard	• Fire and Explosion can happen during the operation phase • Hydrocarbons are volatile under certain conditions and their vapours in specific concentrations are flammable. If precautions measures are not taken to prevent their ignition, fire and subsequent safety risks may arise.	• Sufficient water should always be available for fire fighting purposes • Any device or action that could cause ignition or spark shall not be permitted on near the fuel tank • Warning signs prohibiting possible ignition agents should be clearly displayed on site • Good housekeeping such as the removal of flammable materials including rubbish, dry vegetation, and hydrocarbon-soaked soil from the vicinity of the fuel	Operation	• Eco-fuel Investment CC • Site manager • HSEO

		tank • Fire fighting trainings • The Emergency Response Plan should be implemented and should address the potential spills • Regular inspections to inspect and test fire fighting equipment and pollution control measures at the storage facility • Fuel tanks should be established away from potential neighbouring fire points • All fire precautions and fire must be in accordance with SANS 10089-1:2008, or better • Experience has shown that the best chance to rapidly		

		put out a major fire is in the first 5 minutes. It is important to recognize that a responsive fire prevention plan does not solely include the availability of fire fighting equipment, but more importantly, it involves premeditated measures and activities to prevent, curb and avoid conditions that may result in fires • There must be an emergency evacuation point		
Fire and Explosion Hazard	• Fire risk and explosion during tank removal is a huge risk because of the use of machinery on a highly volatile	• There is need to ensure that all employees to work on decommissioning are made aware of the safety concerns of their task used	Decommissioning	• Eco-fuel Investment CC • Site manager • HSEO

	environment. • Existence of fuel fumes from the tank during removal also poses a risk of ignition within the surrounding areas.	does not result in ignition • Clear perimeter or boundary within which no other person can pass through, except for the decommission team • Fire control and suppression equipment in place during the entire process • An assembly area should me established on site and training of stuff on fire fighting and first aid administration		

5.6 HYDROCARBON WASTE

Impacts	Description	Mitigation measures	Project Phase	Responsibility
Hydrocarbon waste	• Liquid waste in the form of diesel and oil is normally the potential waste generated at site. • Fuel spillages during off-loading into the tank are a potential risk. Domestic waste such as papers are generated from the offices on site. • Waste in the form of contaminated soil due to spillage might occur, but should be prevented through the use of containment	• Hydrocarbon waste management is vital among employees and management. • Use of absorbents are essentially recommended for containing spillages. • Adequate supplies of absorbents should be readily available at all times • Waste separation should be implemented to avoid mixing of contaminated waste and general waste (see **figure 2** for design of installation set-up.) • Proper monitoring of the product levels in the tank must take place to eliminate overfilling • Appointment of a certified	Operation,	• Eco-fuel Investment CC • Engen Namibia • Site manager • Appointed HSEO

	areas as.	waste handling contractor to handle all hydrocarbon waste • Waste minimization policy. bioremediation of contaminated soil • Frequently cleaning of oil/ water separator • Spill containment around the pump(see figure 2 for design of installation set-up.) • -Spillage bin and clean up kits • Construct oil/water separator • This impact can be reduced through proper training of the operators • 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, so as to react to any spillage or leakages properly and efficiently		
Generation of hydrocarbon and other waste	• Removal/replacement of the tank might cause contamination of soil. • Decommissioning and repairs also result in waste such as rubbles, tanks and other installation components.	• Appointment of a certified waste handling contractor to handle all hydrocarbon waste such as tanks for safe disposal. During repairs and or decommissioning an approved and certified waste management contractor should be present to advise and prevent improper handling and disposal of contaminated waste • Ensure that no concrete rubbles and other materials generated on site are placed, dumped or deposited where it does not contaminate the		• Eco-fuel Investment CC • Site manager • Appointed HSEO

		surroundings		

5.7 GENERAL WASTE

Impacts	Description	Mitigation measures	Project Phase	Responsibility
General waste	Litter in the form of papers and plastics is likely to be produced. In general, the impact of waste is expected to be localized and it will be of low significance if mitigation measures are implemented.	• Strictly, no burning of waste on the site or at the disposal site ,as it possess environmental and public health impacts; • Place bins around the site • Separation of waste should clearly indicated. • Waste should be dumped at an authorized designated area Regular inspection of the site	Operation and decommissioning	• Eco-fuel Investment CC

5.8 RISK OF OCCUPATIONAL HEALTH AND SAFETY

Impacts	Description	Mitigation measures	Project Phase	Responsibility
Risk of OHS	• OHS hazards which might be encountered include dermatitis which is caused by physical contact with fuel. • Prolonged exposures might result in inhalation of fuel vapours hence possibilities of causing cancer.	• Frequent distribution of protective equipment to employees and safety shoes where applicable). • Conduct Hazard identification and risk assessments • All Health and Safety standards specified in the Labour Act should be complied with.	Operation	• Eco-fuel Investment CC • Appointed HSEO

	• Fire hazards can also be a potential risk • The bathrooms are also a source of concern, cleanliness must be maintained so as to avoid health related hazards	• Train workers how to use adequately the equipment • Trainings on occupational health and safety • Safety talks to be done every day before commencement of work • Implementation of Behaviour Based Safety System • Provisions of First Aid Box and trained person in first aid. • Any leakage/spillage shall be immediately attended and provision of urgent cleaning • Work area will be monitored to maintain work environment free from any hazards		

		• Provision of adequate and maintenance of Fire Extinguishers at site • Provisions of immediate accident/incident reporting and investigation • Safety Posters and slogans should be exhibited at conspicuous places		
Risk of OHS	• During removal of installations on site, occupational exposures are normally related to inhalation of fuel vapours and physical contact with fuels. • The decommissioning phase involves working at heights, operating heavy machinery and risk of cuts and falling	• Provision of appropriate PPE during decommissioning process • Ensure that there is a Safety representative , fireman and first aider during decommissioning phase at all times • Conducting tool box talks every morning before beginning of work. • Provision of signage and	decommissioning	• Eco-fuel Investment CC • Appointed HSEO

	objects.	warning signs for visitors to the site during decommissioning. • Frequent cleaning of bathrooms		

5.9 CUMULATIVE

Impacts	Description	Mitigation measures	Project Phase	Responsibility
Cumulative	• During the operational phase there might be cumulative impacts • Fuel is going to be off-loaded which can result in the release of hydrocarbon vapours which have an impact of reducing the air quality and also causing fires and explosions • Hydrocarbon vapours if	• All possible sources of ignition in the entire area should be eliminated • Sufficient water should always be available in case of fire for fire fighting purposes • Vent pipes should be placed in such a manner as to prevent impact on potential receptors • Regular check tests	Operation phase	• Eco-fuel Investment CC • Contractors • Site manger • Appointed HSEO

	released in the atmosphere can also cause global warming, reduction of photosynthesis of plants and cancer. However. on site there is no alot of vegetation except palm trees hence the cumulative impact will be of low significance			

5.10 ACCESSIBILITY OF FUEL FOR OPERATIONS

Impacts	Description	Enhancement Required	Project Phase	Responsibility
Accessibility of fuel	The storage facility will reduce the distance to be travelled to the nearest filling station which at Oniipa about 8km away.	• Maintain a consistent supply of the stated products • Make provision of timely delivery of fuels to the site.	Operation	• Eco-fuel Investment CC • Appointed Sales department.

5.11 GOVERNMENT REVENUE

Impacts	Description	Enhancement Required	Project Phase	Responsibility
Payment of taxes	The proponent will have to pay tax which will indirectly benefit the whole country.	• Continuous payment of taxes due as regulated in the Namibian laws.	Operation	• Eco-fuel Investment CC • Appointed contractors

CHAPTER SIX: DECOMMISSIONING AND SITE CLOSURE

The decommissioning of tanks should be overseen by a professional from the oil industry and the Environmental Officer. The old tanks should be disposed off at a suitable landfill site and disposal certificates provided.

Prior the decommissioning of the site or replacement of any tanks a qualified environmental consultant should be appointed to conduct a due diligence survey to ensure the environmental status of the site.

- Ensure that the site follows all relevant by-laws and policies
- A contamination assessment should be carried out to assess and determine whether any pollution occurred during operations.
- Asses the site to determine if the presence of contamination present any additional risk to human health and the environment. If any contamination occurs that it is remediated to acceptable levels
- Site rehabilitation

CHAPTER SEVEN: ENVIRONMENTAL MONITORING

An environmental monitoring plan provides a delivery mechanism to address the adverse environmental impacts of a project during its execution, to enhance project benefits, and to introduce standards of good practice to be adopted. An environmental monitoring plan is important as it provides useful information and helps to assist in detecting the development of any unwanted environmental situation, and thus, provides opportunities for adopting appropriate control measures.

Important parameters that are sensitive include groundwater, occupational health and safety, fire and explosion and generation of hydrocarbon wastes. The suggested monitoring details are outlined in the following sections.

IMPACT	RECEPTORS	TYPE OF MONITORING	FREQUENCY
Ground and surface water contamination	Underground aquifers Flood channels, Subsidiary streams, sea and dams	• Inspections on above-ground tanks for possible leakages • Testing of "grey water" from oil/water separator pit before discharge into sewer lines or flood channels	• Quarterly • Any time when high discrepancies in fuel reconciliation • Regularly as required
Fire and explosion	Environment Humans and property)	• Regular inspections should be carried out to inspect and test firefighting equipment. • Regular servicing of firefighting equipment	• Quarterly • Annually
O.H.S	Employees	• Site inspection • Conducting Hazard and Risk Assessments • Safety procedures evaluation. • Health and safety incident monitoring	• Daily

Hydrocarbon wastes	Environment.	• Inspection of pumping installations • Monitoring of the oil/water separator • Proper training of fuel attendance. • Spillages more than 200L should be reported to the Ministry of Mines and energy • Proper spill clean-up kits on site	• Daily • Daily • Every time there is a new employee
Generation of waste (solid)	Land	• Site inspection on housekeeping • Regular collection of waste by the council	• Daily
Air quality (emissions)	Employees, Atmosphere	• Air quality tests	• Annually

CHAPTER EIGHT: CONCLUSIONS

There will be minimised unfavourable impacts on the environment if the Environmental Management plan is followed and implemented accordingly. Whenever impacts occurred, immediate action should be taken to minimise the increase effects related with the impacts.

To ensure the importance of this document to the specific stage of project, it needs to be reviewed throughout all phases especially when there is a change in activities in order to enhance mitigation measures.

The Environmental Management Plan should be used as a reference document during construction, operational and decommissioning phases and auditing should take place in order to determine compliance with the EMP for the proposed site. Parties responsible for any wrongdoing of the EMP should be held responsible for any rehabilitation that may need to be undertaken.

Nam Geo-Enviro Solutions
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CHAPTER NINE: REFERENCES

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