

ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) APPLICATION - ENVIRONMENTAL MANAGEMENT PLAN (EMP) FOR THE:

PROPOSED CONSTRUCTION AND OPERATION OF THE ARIAMSVLEI TRCUKPORT AND SERVICE STATION, KARAS REGION: NAMIBIA

MEFT Application No.: **APP- 230423001334**

Document Version: **Final for Submission**

Date: **24 April 2023**

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DOCUMENT DATA SHEET

DOCUMENT VERSION

001-Final

PROJECT NAME	THE PROPOSED CONSTRUCTION AND OPERATION OF THE ARIAMSVLEI TRCUKPORT AND SERVICE STATION, KARAS REGION: NAMIBIA
REPORT TITLE	ENVIRONMENTAL MANAGEMENT PLAN (EMPS)
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DATE OF SUBMISSION	25 April 2023

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DEFINITIONS

TERMS	DEFINITION
BID	Background Information Document
EAP	Environmental Assessment Practitioners
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA (R)	Environmental Impact Assessment (Report)
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
EMPr	Environmental Management Plan Report
GHG	Greenhouse Gasses
ISO	International Organization for Standardization
I&Aps	Interested and Affected Parties
MEFT: DEA	Ministry of Environment, Forestry and Tourism's Directorate of Environmental Affairs
NHC	National Heritage Council
NEMA	Namibia Environmental Management Act
ToR	Terms of Reference
UNFCCC	United Nations Framework Convention on Climate Change

1. CHAPTER ONE: BACKGROUND

1.1. Introduction

The proponent intends to construct and operate a fuel retail facility and truck port to service trucks and vehicles passing through to South Africa through the Ariamsvlei border, including local residents of Ariamsvlei. According to the Environmental Management Act (2007) and its Regulations (2012), this project is under listed activities which may not be undertaken without an Environmental Clearance Certificate (ECC). It is on basis above that Enviroplan Solutions has been appointed as an Environmental Assessment consultant to carry out an Environmental and Social Impact Assessment study to obtain an environmental clearance certificate as per the requirements of the Environmental Management Act No. 7 of 2007 and Namibian Environmental Impact Assessment Regulations of 2012.

The purpose of the Environmental Management Plan (EMP) is to guarantee that the project is executed in an ecologically sustainable manner, where all contractors, subcontractors, and consultants are aware of the potential environmental impacts of the proposed project and take appropriate measures to manage them effectively. Additionally, the EMP ensures that the project is implemented according to the design by taking appropriate actions to lessen adverse environmental impacts throughout its lifespan. The roles and responsibilities of the key personnel and contractors involved in the project are also detailed in the EMP.

This EMP is specifically developed as a management tool for the construction, operation, and possible decommissioning phases of the Ariamsvlei truckport and service station project in the Karas region of Namibia.

1.2. Legal Framework: Legislations, Policies And Guidelines

This section provides an overview of the regulatory framework that pertains to the project, and emphasizes the importance of complying with all relevant legislation. The Environmental Management Act No. 7 of 2007 is the primary legislation that governs the environment, and its objectives include promoting sustainable environmental management and the responsible use of natural resources, establishing principles for decision making

regarding environmental matters, and creating a process for assessing and controlling activities that could have significant environmental impacts. However, this section also considers other relevant legislation that should be adhered to by the proponent and all contractors involved in the project, with compliance requirements outlined in each piece of legislation. A table is provided below that outlines the legal frameworks that are relevant to the project.

Table 1: Regulatory framework relevant to the project

LEGISLATION	RELEVANT PROVISION	TYPE OF REQUIREMENT
<p>Namibian Constitution First Amendment Act 34 of 1998</p>	<p>-“The State shall actively promote and maintain the welfare of the people by adopting policies that are aimed at maintaining ecosystems, essential ecological processes, andthe biological diversity of Namibia.</p>	<p>-The constitution requires sustainable utilisation of natural resources basis for the benefit of all Namibians, both present and future.” (Article 95(I)).</p>
	<p>-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.</p>	<p>-Through implementation of the EMP, Puma Energy Namibia should ensure conformity to the constitution in terms of environmental management and sustainability.</p>
	<p>-It further promotes the sustainable utilisation of living natural resources basis for the benefit of all Namibians, both present and future.” (Article 95(I)).</p>	
	<p>-Requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27).</p>	<p>-This Act and its regulations should inform and guide the environmental</p>
	<p>-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)).</p>	<p>-The project proponent should ensure that all provisions of the EMP are implemented, and regular environmental monitoring and evaluations should be conducted by</p>

LEGISLATION	RELEVANT PROVISION	TYPE OF REQUIREMENT
	<p>-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.</p>	<p>independent consultants.</p>
<p>EMA Regulations (2012)</p>	<p>-Details projects which cannot be undertaken without an ECC.</p> <p>-Details requirements for public consultation within a given environmental assessmentprocess.</p>	<p>-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 Soweto service station.</p>
<p>Pollution and Waste Management Bill (draft)</p>	<p>-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.</p> <p>-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.</p>	<p>-The project should be executed in harmony with the requirements of the act to reduce negative impacts on the surrounding environment from waste.</p> <p>-A waste management strategy that follows recycling, reuse and reducing should be commissioned throughout the project activities.</p> <p>-All waste should be handled by qualified waste handling contractors and disposed of at</p>

LEGISLATION	RELEVANT PROVISION	TYPE OF REQUIREMENT
		approved landfill.
South African National Standards SANS 10089-3	-Part 3: The installation of underground storage tanks, pumps/dispensers and pipe work atservice 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. mainly
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 Atmosphericpollution 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; 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.	-Section 21(2) stipulates that purified effluent is to be returned as close as possible to the point of abstraction of the original water.

LEGISLATION	RELEVANT PROVISION	TYPE OF REQUIREMENT
		<p>-An approved waste handling contractor should collect water in the oil and water separator pits.</p> <p>-No wastewater should be disposed of into the environment.</p>
	-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	
<p>Labour Act (No 11 of 2007) in conjunction with Regulation 156, 'Regulations Relating to the Health and Safety of Employees at work'.</p>	<p>-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).</p> <p>-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.</p>	<p>-As a requirement on site, a Safety and Health representative should be appointed.</p> <p>-The employer shall report all incidents occurring on site to the Ministry and accordance to the regulations.</p> <p>-The proponent should ensure securing a safe environment and preserving the health and welfare of employees at work.</p> <p>This will include applying appropriate hazard management plans and enforcing Occupational Health and</p>

LEGISLATION	RELEVANT PROVISION	TYPE OF REQUIREMENT
		Safety (OHS) enforcement by contractors.
Public Health and Environmental Act, 2015	<p>-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.</p> <p>(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.</p> <p>(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.</p>	-The service station must be registered for a certificate of fitness.
Petroleum Products and Energy Act 13 of 1990	<p>-The Act requires that for the operation of the service station, a retail license must be obtained fromthe relevant ministry.</p> <p>Adding on, the Act requires incident reporting of major spillages occurring on site for pollution control.</p>	-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;	<p>-The proponent shall separate waste at the site.</p> <p>-The proponent should ensure that all possible “hazardous” categorised substances and waste will be handled</p>

LEGISLATION	RELEVANT PROVISION	TYPE OF REQUIREMENT
	<p>and to provide for matters connected therewith".</p> <p>The Act requires that a license must be obtained for the storage and distribution of a classified hazardous substance with the relevant Authority</p>	<p>by a certified hazardous waste handler.</p>
<p>Road Ordinance 1972 (Ordinance 17 of 1972)</p>	<ul style="list-style-type: none"> -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). 	<p>-The proponent should ensure compliance with the terms of the Road Ordinance.</p>
<p>Nature Conservation Ordinance 4 of 1975 with Amendments and special regulations</p>	<p>-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"</p>	<p>-The proponent should protect various species that have conservation status.</p>
<p>National Biodiversity Strategy and Action Plan (NBSAP2)</p>	<p>-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.</p>	<p>-The proponent should consider all associated impacts, both acute and long term, and mitigation measures should be implemented to sustain the local biodiversity.</p>

1.3. International Conventions And Protocols Relevant To The Project

It is important to recognize that Namibia is a signatory to several international conventions and protocols aimed at protecting the environment, and these are relevant to the proposed project. The following is a list of international conventions and protocols that are applicable to the project:

- Vienna Convention for the protection of the ozone layer, 1985.
- United Nations Framework Convention on Climate Change 1992.
- Convention on 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.

2. CHAPTER TWO: PROJECT DESCRIPTION AND LOCATION

2.1. Project Location

The proposed truckport and service station is to be erected at farm Ukamas No. 69 in Ariamsvlei. The site is located along the B39 road that enters into Upington, South Africa.



Figure 1: Site Locality

2.2. Brief Description Of The Environment

Ariamsvlei is located in the Karas Region of Namibia, in the southern part of the country. The region is characterized by a dry and arid climate, with very low precipitation and high temperatures during the summer months. The area is part of the Kalahari Desert, which covers much of southern Africa and is known for its sandy soils, sparse vegetation, and harsh environmental conditions.

The vegetation in this region is adapted to the arid conditions and includes shrubs, succulents, and grasses. Wildlife in the area includes a variety of desert-adapted animals such as springbok, oryx, ostrich, and meerkats, as well as a variety of reptiles and insects.

Water resources in the region are scarce and largely dependent on seasonal rainfall. The Orange River, which forms the border between Namibia and South Africa, is an important source of water for the region. However, much of the river's water is used for irrigation, and as a result, the river often runs dry before it reaches the coast.

The region faces a number of environmental challenges, including desertification, soil erosion, and biodiversity loss. Overgrazing, unsustainable agriculture practices, and climate change are all contributing factors to these challenges. Despite these challenges, efforts are being made to promote sustainable land use practices and conservation efforts in the region.

2.3. Description And Design of the project

The service station will offer the following services on sell on site:

- Petrol and diesel fuel;
- Toilets and Bathrooms
- Heavy vehicles Parking bay
- Small grocery shop and vehicle accessories;

Further service infrastructures to be established for the operation of the fuel station include:

- Service area building;
- Solid and sewer management facilities;
- Liquid petroleum fuel station;
- Surface water drainage
- Firefighting equipment
- Fill pipes and Lighting; and
- access roads

The project shall involve the setting up of modern fuel dispensing pumps, 1 for petrol and 1 for diesel. Tanks shall be buried underground. All the pumps shall operate under a canopy (shed). A localized drainage system shall be in place to capture fugitive leak fuel which will be directed to an oil separator for sound environmental stewardship

3. CHAPTER THREE: ENVIRONMENTAL MANAGEMENT PLAN (EMP)

3.1. Purpose Of The Environmental Management Plan (Emp)

In line with the Namibian Environmental Management legislation and International best practices the proponent will implement an Environmental Management Plan (EMP) to prevent, minimise and mitigate negative impacts. The environmental management plan is being developed by Enviroplan Consultants cc to address all the identified expected impacts, the plan will be monitored and updated on a continuous basis with aim for continuous improvement to addressing impacts.

This section outlines the Environmental Management Plan (EMP) for the proposed Aboveground fuel storage tank and associated infrastructure at the Ariamsvlei trcukport and service station, Karas region: Namibia. The EMP stipulates the management of environmental programs in a systematic, planned and documented manner. The EMP below includes the organizational structure, planning and monitoring for environmental protection at the proposed development site and other areas of its influence. The aim is to ensure that the facility maintains adequately controlled over the project operations to:

- To prevent negative impacts where possible;
- Reduce or minimise the extent of impact during project life cycle;
- Prevent long term environmental degradation.

3.2. EMP Administration

There is a strong need to clearly outline the roles and responsibilities of all stakeholders to ensure that the EMP is fully implemented. To ensure that the EMP is effectively implemented, the consultant also recommends that MET: DEA also conduct regular inspection visits on-site to enforce conducting of quarterly and biannual reports. Furthermore, there is also a need for the proponent to appoint an overall responsible person (project manager) to ensure the successful implementation of the EMP.

3.3. Roles and Responsibilities

Table 2: EMP Implementation-Roles and Responsibilities

ROLE	RESPONSIBILITIES
Ahram Investment cc	Responsible to enforce EMP implementation to contractors
Environmental Control Officer	<ul style="list-style-type: none"> • Implement, review and update the EMP. • Ensure all reporting and monitoring required under EMP is undertaken, documented and distributed as needed • Conduct environmental site training (toolbox talks) and inductions with the support of an environmental consultant. • Conducts environmental audit at work site with the support of environmental consultant. • Close out all non-conformances. • Ensure materials being used on site are environmentally friendly and safe.
The Department of Environmental Affairs	<ul style="list-style-type: none"> • Review the EMP and any amendments to the EMP. • Review reports of environmental issues and non-conformances as issued. • Review and approve environmental reports submitted as part of EMP implementation
Site Engineers	<ul style="list-style-type: none"> • Control and monitor actions required by the EMP. • Report all environmental issues to HSE Manager. • Ensure documented procedures are followed and records kept on site. • Ensure any complaints are passed onto the management within 24 hours of receiving the complaint.

ROLE	RESPONSIBILITIES
Workers	<ul style="list-style-type: none"> • Follow requirements as directed by site engineers. • Report any potential environmental issues to site engineer/project manager, indicating spilt oil, excess waste, excessive dust generation, dirty water running off the site and other possible non-conformances

3.4. Planning and design

Table 3: Planning and Design Management Actions

Aspect	Management Requirement	Responsibility	Timeframes
Truck port and service station Design	<ul style="list-style-type: none"> • The design standards to be applied for Truck port and service station should comply with the internationally accepted public exposure guidelines. 	Proponent	Pre-construction phase
Labour Recruitment	<ul style="list-style-type: none"> • It is anticipated that Ahram Investment cc will utilize its own workforce. However, should there be the need to employ an extra person(s), especially for unskilled labour, it is highly recommended to recruit local people from Omahenene. 	Proponent	Ongoing
Surrounding property owners	<ul style="list-style-type: none"> • Consent letters are to be obtained from the surrounding property owners before construction. 	Proponent	Pre-construction phase

<p>Construction schedule</p>	<ul style="list-style-type: none"> • A convenient construction work/schedule should be prepared and shared with the surrounding property owners. This will ensure that the surrounding property owners are aware of when to expect the construction team at the site. 	<p>Proponent</p>	<p>Pre-construction</p>
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3.5. Construction and Operation

Table 4: Construction and Operation EMP (C&O EMP)

Impact	Description	Effects	Time frame	Responsibility	Action
Noise pollution	Noise will be generated through: <ul style="list-style-type: none"> • Construction of drainage services and water reticulation systems. • Construction of site structures • Moving of vehicles. 	<ul style="list-style-type: none"> • The health of working personnel could be disturbed. • Passers-by could be disturbed by the noise. • General annoyance • Drive away local animal species near the project site 	6-8 months	<ul style="list-style-type: none"> • ECO • Site Manger 	<ul style="list-style-type: none"> • A construction interval will be established, used and adhered to, daytime only (6am to 5pm). • During operation the facility will operate 24 hrs a day. • Workers will be issued ear plugs to protect them from excessive noise. • Public will be notified through printed timetable stating planned operational activities. • Site notices will be erected on and around the site notifying visitors and nearby residents of different hazards on site.
Dust Generation	Dust will accumulate because of the land preparation, onsite movements of vehicles	<ul style="list-style-type: none"> • Can lead to respiratory illnesses especially to those working in the area. • General air pollution. 	6-8 months	<ul style="list-style-type: none"> • ECO • Project Manger 	<ul style="list-style-type: none"> • Dust suppression will be done through watering dust sources surfaces. • Ensure that protective equipment such as respirators are distributed to

Impact	Description	Effects	Time frame	Responsibility	Action
	and machines, wind blowing on loose material during construction and tipping.	<ul style="list-style-type: none"> Nuisance to nearby residents 			<p>employees and ensure their use.</p> <ul style="list-style-type: none"> Site notices to be erected on and around the site to inform visitors and surrounding residents. Avoid construction operations during windy days. Regular testing of dust levels during construction period (PPM), maintain dust levels at minimum by monitoring construction activities, stop operations if dust levels are high.
Debris Accumulation	Debris will accumulate due to construction activities, removal of existing dilapidated infrastructure on site	<ul style="list-style-type: none"> Can be an eyesore. Can be source of water and soil pollution. Can result in scenic pollution 	2-3 months	ECO	<ul style="list-style-type: none"> Reuse reusable material such as bricks. Recycle where possible Reduce debris accumulation by acquiring/procuring only material that is sufficient, avoid over stocking of construction material.
Loss of Biodiversity	<ul style="list-style-type: none"> Vegetative plants on site will be removed Habitat destruction for both ground 	<ul style="list-style-type: none"> The clearing of vegetation will result in the breaking of the ecosystem processes in the area. 	Construction phase	<ul style="list-style-type: none"> ECO Site Manager 	<ul style="list-style-type: none"> The proposed project area surroundings are already developed, hence there is little vegetation to be affected by the development.

Impact	Description	Effects	Time frame	Responsibility	Action
	<p>dwelling species and tree dwelling species.</p> <ul style="list-style-type: none"> • Soil disturbance on and around the site. 	<ul style="list-style-type: none"> • Loss of aesthetic value of the proposed project area. • The few small animals still habituating the place such as small rodents and birds will be forced away. • The ecosystem food chain on and around the area will be broken. 			
Greenhouse gas emissions	<p>Green House Gasses (GHGs) emissions will be produced from the following activities:</p> <ul style="list-style-type: none"> • Fuels combustion for transport (construction vehicles and equipment) • Ground excavation releases 	<p>-Global climate change - Air pollution</p>	12 Months	<ul style="list-style-type: none"> • ECO • Project Manager • Department of Environmental Affairs. 	<ul style="list-style-type: none"> • Adopt the use of ethanol blended fuels wherever necessary. • Design an operation system that cuts on fuel consumption. • Promote the use of energy efficient machinery, equipment and electricals during construction and operation

Impact	Description	Effects	Time frame	Responsibility	Action
	<p>phosphorus found underground and releases particulate matter into the atmosphere.</p>				
<p>Pollution from construction activities</p>	<p>Construction is associated with a lot of raw material and activities that results in pollution</p>	<ul style="list-style-type: none"> • Chemical pollution from oil spills resulting from the handling of various machineries used during the construction phase • Construction rubble, empty packaging containers/bags and materials remnants. • Construction workers can also pollute the surrounding environs if they are not provided with adequate toilet facilities and a waste management system for 	<p>Construction phase</p>	<ul style="list-style-type: none"> • ECO • Project Manger 	<ul style="list-style-type: none"> • Ensure that all waste from construction activities is stored and contained in designated skip containers and transported to a nearby waste disposal site. • Bulky waste such as building rubbles must be collected and disposed of at any of the various municipal satellite sites or for landfilling. • Adequate mobile toilets must be provided at the construction camps for the use of the workers. • A skip container will be put on site and regularly emptied to handle domestic

Impact	Description	Effects	Time frame	Responsibility	Action
		domestic waste.			waste.
Hydrocarbons release into the environment	The storage of fuel in underground tanks poses a risk of spillage of hydrocarbons additionally also from vehicles and machinery operations, maintenance through leakages and spillages which may result in environmental contamination	<ul style="list-style-type: none"> • Washing away of contaminated soils by rains into nearby rivers • Pollution of soil and affecting small living organisms habituating the soil • Result in possible groundwater pollution. • Possible fire risk on and around the site 	Construction Phase	<ul style="list-style-type: none"> • ECO • Project Manager • Department of Environmental Affairs. 	<ul style="list-style-type: none"> • Implement a maintenance programme to ensure all vehicles, machinery and equipment are remain in proper working order • Vehicle maintenance should be Conducted in designated areas only, preferably off-site. • Waste oil, fuels and other chemicals from drip trays on stationery vehicles and machinery will be disposed of as hazardous waste at a licensed facility by a specialist hazardous waste handler. • Oil residue will be treated with oil absorbent material such as Drizit or bio-remediation and removed to an approved waste disposal site. • No bins containing organic solvents such as paint and thinners shall be cleaned on site, unless containers for liquid waste disposal are provided on

Impact	Description	Effects	Time frame	Responsibility	Action
					site.
Safety and Health risks	Construction related Safety and Health hazards	Injuries to workers such as Occupational dermatitis, slips and fall of humans and objects, musculoskeletal disorders, etc.	Construction phase	Project manager	<ul style="list-style-type: none"> Equip workers with Personal Protective Equipment (PPE), provide trainings on how to effectively use the PPE. Provide platforms for briefings and meetings about possible safety and health hazards in the workplace. Provide site signs warning and informing about different hazards on site.
Population Influx	The project will bring in skilled and unskilled workforce into Walvis Bay from other places increasing population density in the area.	<ul style="list-style-type: none"> There is potential for cultural systems conflict between locals and new people in the area Potential for rife prostitution and spread of HIV/AIDS and other STDs Potential for scaring away of 	Construction phase	<ul style="list-style-type: none"> ECO Project Manger 	<ul style="list-style-type: none"> Train and brief employees to respect local cultures and leaders, Engage on massive sexual health training and awareness and providing contraceptives such as condoms, as well as provide means counselling for those that are affected by HIV/AIDS and other STDs,

Impact	Description	Effects	Time frame	Responsibility	Action
		local wild animals, poaching and removal of protected indigenous vegetative species			<ul style="list-style-type: none"> • Provide environmental trainings and continue a regular basis briefing the employees about nature conservation (animal and plants) and discourage indiscriminate vegetation clearance.
Land use change	The existing environment will drastically change from a dormant piece of land to a modernised urban development.	Sudden change in landscape appearances may be unfavourable to the residents who frequent the area.	Permanent	<ul style="list-style-type: none"> • ECO • Project Manger 	<ul style="list-style-type: none"> • The development should blend into the existing area through designing and colour coding. • Green designing will bring life to the site and blend with surrounding areas. • The project area is already within an existing depot, hence there are no anticipated impacts to the land use change, since the proposed development will have a low significance in impacting current land uses.
Employment creation	The construction exercise provides an opportunity of outsourcing work	Improves disposable income to those employed and their immediate families.	Project lifetime	Project Manger	Work with local leadership (councillor) on acquiring non-skilled labour from the residents.

Impact	Description	Effects	Time frame	Responsibility	Action
Business linkages	Raw materials acquiring and contracting companies provide an opportunity for businesses.	<ul style="list-style-type: none"> Local suppliers will be presented with an opportunity to empower their businesses. Construction workers can be provided with accommodation, food and services from the local community increasing business activities. 	Construction phase	Project Manger	The proponent will outsource most of its materials and services from Walvis Bay.

3.6. Operational Phase

The operational phase is the most critical component of project implementation since it is more on a long term, however and it is normally associated with less impacts as compared to construction phase. This phase will comprise of the actual day to day running of the service station. This phase is expected to last permanently, but with upgrading activities occasionally. There will be several impacts that will occur on a daily basis or other sequential routine. The phase forms the basis of an Environmental Management Plan that is detailed in Chapter and will be followed by the decommissioning phase. The major impacts identified by this study for the operational phase are as detailed in the previous chapter.

Table 5: Operational Phase

Aspect	Description	Effects	Time Frame	Responsibility	Action
Noise pollution	<ul style="list-style-type: none"> Vehicle movements People at the operational sites 	<ul style="list-style-type: none"> The health of working personnel could be disturbed. Residents could be disturbed by the noise. General annoyance Driving away of local animal's species near the project site. 	Project lifetime	ECO	Provide public notices through printed timetable showing schedule of planned work.
Air Quality	<ul style="list-style-type: none"> Noxious Smells Fumes 	<ul style="list-style-type: none"> Dizziness amongst employees General environmental 	Project lifetime	ECO	<ul style="list-style-type: none"> Tanks must have vent pipes installed on the tanks During fuel tank refilling, a vapour

Aspect	Description	Effects	Time Frame	Responsibility	Action
		nuisance <ul style="list-style-type: none"> • Intoxication • Fumes poses fire risk 			containment system must be installed.
Occupational health and safety risks and accidents	Dealing with hazardous substance can pose threats to workers and the surrounding people.	Injuries to workers such as Occupational dermatitis, slips and fall of humans and objects, musculoskeletal disorders, etc.	Project lifetime	ECO	<ul style="list-style-type: none"> • Equip workers with Personal Protective Equipment (PPE). • Provide trainings on how to effectively use the PPE. • Provide platforms for briefings and meetings about possible safety and health hazards in the workplace • OHS legal appointments on site in accordance with the Labour Act and the OHS regulations. • Specific safety measures should be in place in case of fire and explosion. • On site staff should be trained in firefighting
Water and soil quality	Hydrocarbons release into the environment	Ground and surface water contamination: Both chemical and physical contamination	Project lifetime	DEA / Namwater	<ul style="list-style-type: none"> • Visual monitoring and photographic record of any surface and/or groundwater intersected during construction.

Aspect	Description	Effects	Time Frame	Responsibility	Action
					<ul style="list-style-type: none"> • There is need to drill monitoring wells around the service station facility to monitor water samples quarterly, to check for pollution. • Visual monitoring during rainfall events to measure the level of contamination of runoff water • Vehicles and machinery are to be regularly serviced to minimise oil and fuel leaks. • An oil separator should be installed around the fuel dispensing bay, car washing bay and the truck parking bay to prevent oils being channelled into the main sewerage works. • The Aboveground storage tanks should be double walled bunded to ensure that spillages are contained • A stormwater management system with an oil separator shall be fitted to ensure that any wastewater is free of

Aspect	Description	Effects	Time Frame	Responsibility	Action
					<p>hydrocarbons and will not contaminate the environment.</p> <ul style="list-style-type: none"> Leak detection systems and alarms shall be installed on all tanks and pipes, to ensure swift response to spills and leakages. There shall be spill cleaning kits on site at all times, and employees shall be trained on use and storage of used spill cleaning materials
Energy usage	Operation of the service station consume electrical energy daily on some cases generators and standby, this can affect the atmosphere	Energy supply through the main grid will be strained	Permanent	Building/Site manager	The proponent should explore the use of energy efficient appliances.
Solid Waste	Solid waste will be generated by the activities and operations at the service station. It is therefore very important to construct appropriate infrastructure to	<ul style="list-style-type: none"> Eyesore to the environment Unwanted nutrient disposal into the soils, Detrimental to livestock health 	Permanent	-Site manager	<ul style="list-style-type: none"> Visual inspections and monitoring All waste will be managed by the Walvis bay municipality from collection to dumping, the developer will ensure that domestic waste handling facilities such as solid waste

Aspect	Description	Effects	Time Frame	Responsibility	Action
	management thus waste types like bins etc.				<p>bins and skip containers are available at the service station.</p> <ul style="list-style-type: none"> Waste separation will be provided for to allow for recycling of recyclable materials.
Sewerage and effluent waste	Sewer and wastewater release into the environment	<ul style="list-style-type: none"> Health hazard Communicable diseases Eutrophication of rivers Groundwater Contamination 	Permanent	Site Manager	<ul style="list-style-type: none"> All sewerage waste will be channelled into the town council sewer reticulation system. Wastewater and solids on site will be cleared (desludged) regularly and the interval depends on actual tank capacity and disposal habits. Wastewater from the oil and water separation pits to be analysed regularly to ensure that it's within acceptable quality. General maintenance of all pipes and temporary tanks on site.
Spillages and leakages	Underground tanks can leak or surface leaks and spillage	Adverse environmental contamination	Project lifetime	ECO	<ul style="list-style-type: none"> Sand buckets to be on site to clean minor spillages during fill up

Aspect	Description	Effects	Time Frame	Responsibility	Action
	during refilling				<ul style="list-style-type: none"> • Spillages above 200 litres are to be reported immediately to Ministry of Mines and Energy and MET:DEA., • Fuel, oils and chemicals are to be stored in bunded areas. • Hazardous chemicals (such as fuels) are to be handled over areas provided with impervious surfaces. • Spills of hazardous chemicals are to be contained and cleaned-up to ensure protection of the environment. • All the necessary PPE required for the safe handling and use of petrochemicals and oils shall be provided to, and used or worn by, the onsite staff • Chemicals, oil and fuel must be stored securely to prevent any accidental spills. • A leakage detecting system to monitor underground fuel storage tanks should

Aspect	Description	Effects	Time Frame	Responsibility	Action
					<p>be installed to enable strict and practical detection of leakages.</p> <ul style="list-style-type: none"> The underground fuel storage tanks should be replaced on regular as recommended by suppliers as well as depending on environmental conditions and natural disasters. All fuel storage and handling facilities in Namibia must also comply with strict safety distances as prescribed by SANS 10089.
Increased storm water flow	The area is undeveloped hence most water quickly infiltrates as it reaches the ground, but due to the paving and hard surfaces storm water will increase	<ul style="list-style-type: none"> Enhance the chances of flood occurrences Chances of soil erosion and gully formation will be increased 	Permanent	<ul style="list-style-type: none"> Site Engineer ECO 	Standard storm water drainage will be part of the water reticulation designs indicating the storm water deposit areas.
Infrastructure hazards	Infrastructure hazards are potential risks that building pose to its inhabitants, local environment or surrounding	<ul style="list-style-type: none"> There is potential for building collapse. Firebreaks potential 	Permanent	<ul style="list-style-type: none"> Site Engineer Contractor-Project 	<ul style="list-style-type: none"> Sewerage infrastructure will be regularly monitored and inspected over time. Standard buildings will be constructed

Aspect	Description	Effects	Time Frame	Responsibility	Action
	residents.			proponent • Buildings inspectorate • Ministry of Health and Social Services. • Ministry of Safety and security	<ul style="list-style-type: none"> • Fire emergency evacuation plan will be put in place to avoid fatalities and injuries in case of an emergency.
Development of the area	The project will further develop the project area.	Ripple effects will result in construction of supporting infrastructure such as schools, hospitals, car services and supermarkets.	Permanent	Regional council	The Development should be regulated in such a way that the local people are empowered and benefit from the development activities.
Revenue generation	The development is bound by to pay tax and rates to the Ohangwena Regional Council and the government.	-The municipality and other service providers will benefit from revenue generation from the development -Business facilities will be	Permanent	<ul style="list-style-type: none"> • Project proponent 	The project will benefit the locals, authorities and the government if all dues, rates and taxes are adhered to.

Aspect	Description	Effects	Time Frame	Responsibility	Action
		paying tax to the government benefiting the country at large.			
Rehabilitation maintenance of the environment.	Currently the project environment is already degraded	-After construction trees will be planted and a green zone created improving the aesthetic value of the environment to a better position than it was before.	Permanant	Building/site manager	<ul style="list-style-type: none"> • During operation phase tree planting will continue and maintenance of the green zone. • Regular watering of the lawns that will be planted.

3.7. Environmental Monitoring Plan

The importance of monitoring cannot be overstated as it enables the identification of the success of mitigation measures taken to address significant impacts. Monitoring activities can also help to identify unforeseen impacts, giving sufficient time to analyze the situation and implement measures to minimize negative effects. To ensure proper monitoring, survey records and results must be maintained and inspections conducted, highlighting any problems and measures taken to address them.

Before the start of site preparation and construction activities, the main contractor should submit an environmental monitoring plan for review and approval by relevant authorities. The plan should include details such as the location of the construction camp and toilet facilities, material storage areas, solid waste management plan, dust control measures, activity schedule, and more. The developer should also present a landscape plan, with the contractor marking and hoarding any trees or vegetation earmarked for protection. This step ensures that environmental considerations are incorporated from the outset, allowing for the smooth implementation of monitoring measures throughout the project lifecycle.

The entity selected to carry out environmental monitoring of the construction works should then prepare an environmental monitoring programme based on the above, the requirements of the EIA, and conditions of the development permit. The major elements of the environmental impact monitoring programme to be implemented during the construction phase of the project are as follows:

- Site clearance to ensure that trees marked for protection are left untouched and that large areas of soil are not left exposed and uncovered for extended periods of time.
- Site drainage and surface runoff, especially during and shortly after major rainfall events, to ensure there is no flooding, ponding and runoff of surface water. Compliance of construction works with site management and landscape plans.
- Ensure transportation of earth materials is done by covered trucks and from approved sites.
- The contractor must immediately and completely clean up spills of materials in public areas.
- Solid waste disposal practices to ensure appropriate on-site management and final disposal at approved dump.

4. CHAPTER FOUR: CONCLUSION AND RECOMMENDATIONS

4.1. Recommendation from Environmental Assessment Practitioner

The Environmental Impact Assessment process for The Proposed Construction And Operation Of The Ariamsvlei Trcukport And Service Station, Karas Region: Namibia was conducted in accordance to the Environmental Management Act 2007 and EMA Regulation 2012. Further consideration was given to relevant legislation throughout the entire process to ensure a successful assessment process.

Impacts likely to occur during project phases (construction and operation) were assessed depicting a positive outlook despite limited details of the magnitude of the proposed development. Based on the assessment, the overall project is less damaging to the environment demonstrating high job creation opportunities and community development. Impacts with negative effects were also identified and summarized in a form of environmental management plan to ensure sustainable implementation.

The site has access to services such as electricity and roads for accessibility. Adding on the site has minimal vegetation such that no trees will be removed during the construction phase. It is important that the proponent observe and maintain accountability to both socio-economic and environmental sensitive activities from the project, such that the project is harmonized with policy, regulations, administrative frameworks and social interface with the public as proposed in the environmental management plan. Failure to observe these measures will significantly affect the local environment and lead to non-compliance. Therefore, implementation environmental protection measures should be executed in consultation with the key stakeholders.

The consultant hereby recommends that MEFT: DEAF grant the environmental clearance certificate for The Proposed truckport and service station in Ariamsvlei, Karas Region-Namibia, under the condition of full implementation of this EMP.

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