

ENVIRONMENTAL CLEARANCE CERTIFICATE (ECC) APPLICATION – ENVIRONMENTAL SCOPING REPORT (ESR) FOR THE:

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

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Acronyms

TERMS	DEFINITION
BID	Background Information Document
EAP	Environmental Assessment Practitioners
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
GHG	Greenhouse Gasses
ISO	International Organization for Standardization
I&Aps	Interested and Affected Parties
JBIC	Junior Baiano Industrial Consultants
MEFT: DEA	Ministry of Environment, Forestry and Tourism's Directorate of Environmental Affairs
NAMCOR	National Petroleum Corporation of Namibia

EXECUTIVE SUMMARY

EnviroPlan has been engaged by the **Ahram Investment cc** to conduct an Environmental Impact Assessment (EIA), develop an Environmental Management Plan (EMP) and apply for an Environmental Clearance Certificate for the proposed construction and operation of the Ariamsvlei Truck port and Service Station, Karas Region: Namibia.

In terms of the Environmental Impact Assessment Regulations 2012, the proposed project triggered the application for an environmental clearance certificate because of the following activities:

✓ **HAZARDOUS SUBSTANCE TREATMENT, HANDLING AND STORAGE**

- *Activity 9.2: Any process or activity which requires a permit, licence or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, licence or authorisation or which requires a new permit, licence or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste.*
- *Activity 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.*
- *Activity 9.5: The Construction of filling stations or any other facility for the underground and aboveground storage of dangerous goods, including petrol, diesel, liquid, petroleum, gas or paraffin.*

Environmental Impacts

- Impacts on vegetation and biodiversity through clearing of land during construction.
- Generation of waste during construction and operation.
- Health and safety impacts during construction and operation.

Social Impacts

The project is generally expected to contribute to improving the livelihoods of the local community of Ariamsvlei through employment opportunities and increased provision of services and amenities which are not readily available in the area.

An EMP has been developed to mitigate any anticipated possible impacts of the project to the environment.

Public Participation Process

Interested and Affected Parties were notified of the project through site notices and newspaper adverts. All relevant information regarding consultation is covered in Chapter 4 of this document and attached in Appendix A.

Recommendation

Based on the Environmental Assessment it is concluded that most of the impacts identified can be addressed through the recommended mitigation and management actions for both the construction and operation phases of the fuel storage facility. Should the recommendations included in this report and the EMP be implemented the significance of the impacts can be reduced to reasonably acceptable standards and duration. All developments could proceed provided that general mitigation measures as set out are implemented at a minimum.

In this respect it is recommended that the proposed service station receives an Environmental Clearance Certificate, provided that the recommendations described in this report and the EMP are implemented

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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.

In this respect the proponent has appointed EnviroPlan Consulting cc to undertake an Environmental Scoping Assessment (ESA), formulate an Environmental Management Plan (EMP) and apply for an Environmental Clearance Certificate (ECC) to the Ministry of Environment, Forestry and Tourism (MEFT): Directorate of Environmental Affairs (DEA) for the intended development.

This document forms part of the application to be made to the DEA's office for an ECC for the proposed fuel retail facility (service station) establishment, according to the guidelines and statutes of the Environmental Management Act No.7 of 2007 and the Environmental Impacts Regulations (GN 30 in GG 4878 of 6 February 2012).

1.2. PROJECT LOCATION

The proposed truck port and service station is to be erected at farm Ukamas No. 69 in Ariamsvlei. The site is located along the B39 road that connects to Upington, South Africa. The map below (Figure 1) gives an aerial view of the project site.



Figure 1: Proposed truck port and service station site and layout

1.3. PROJECT DESCRIPTION

1.3.1. DEVELOPMENT PROPOSAL & LAYOUT

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

- Petrol and diesel fuel tanks.
- Truck parking facility
- And Bakery that can operate 24/7. The bakery will train women and youth to gain skills.

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

1.3.2. PROJECT SOCIAL RESPONSIBILITY

According to Ahram Investment cc, Ariamsvlei settlement is facing youth unemployment and poverty and they are committing to;

- Employ 50 people on construction and about 100 upon completion of the project, the recruitment process will be done in conjunction with the Ariamsvlei settlement office or the Karasbuirg east constituency office and that insuring the residents benefit more.
- They plan on availing their resources (Transport) for emergency cases free of charge as in most cases residence faced with emergency normally have to wait for an ambulance that take long to arrive.
- Contribute to the Karas development trust.
- Employees will have benefits such as Social security, medical aid and pension.
- Workers who work for more than 5 years with the company will receive 0.5%

- Employees will undergo a training that will equip them with necessary skills to handle different situation and future employment.

1.3.3. ACCESSIBILITY

The site can be accessed through the existing B39 road that con Upington, South Africa.

1.4. INFRASTRUCTURE AND SERVICES

There is an existing powerline, along the access/main road (B39).



Figure 2: Powerline on project site and B39 road

1.5. NEED AND DESIRABILITY

The proposed activity is a welcome development in Ariamsvlei as it provides much-needed fuel efficiency for trucks and vehicles passing through to South Africa via the Ariamsvlei border, as well as for local residents. The proposed site's location is desirable because Ariamsvlei is a border town and entry point to Namibia, frequently visited by trucks, tourists, and normal traffic entering and exiting Namibia.

The location of the proposed site in Ariamsvlei makes it a strategic location for fuel supply, especially given the frequent traffic passing through the area. This could also have positive economic impacts on the local community by potentially attracting more visitors to the town and creating job opportunities.

Overall, the proposed activity could have positive impacts for both the transportation industry and the local community. It's encouraging to see efforts being made to improve infrastructure in the area. In this respect, the proponent saw an opportunity for the proposed development.

1.6. OBJECTIVES OF THIS STUDY

This Environmental Scoping Assessment is being undertaken in compliance with the Environmental Management Act No.7 of 2007 and the Environmental Impact Assessments Regulations (GN 30 in GG 4878 of 6 February 2012).

In terms of the Environmental Impact Assessment Regulations 2012, the proposed project triggered the application for an environmental clearance certificate because of the following activities:

✓ **HAZARDOUS SUBSTANCE TREATMENT, HANDLING AND STORAGE**

- *Activity 9.2: Any process or activity which requires a permit, licence or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, licence or authorisation or which requires a new permit, licence or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste.*
- *Activity 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.*
- *Activity 9.5: The Construction of filling stations or any other facility for the underground and aboveground storage of dangerous goods, including petrol, diesel, liquid, petroleum, gas or paraffin.*

The main objectives of this study are as follows:

- To identify and provide mitigation measures of the expected impacts of the proposed establishment to protect the environment;
- To brief the project proponent of the legal and policy framework governing the proposed activity;

- To identify the possible changes in bio-diversity index that might occur because of project implementation in the area;
- To reflect on the various public concerns which will inform the proponents and DEA's decision making;
- To come up with preventive and precautionary measures for the expected physical and biological environmental negative impacts associated with the proposed activities;
- To structure an effective environmental management plan for the proposed activity to minimise and prevent negative impacts and maximise the positive impacts.

1.7. TERMS OF REFERENCE

The Environmental Scoping Assessment conducted by EnviroPlan Consultants cc provides a comprehensive evaluation of the proposed project producing both ESA and EMP reports documenting the following:

- A complete description of the existing site proposed for development;
- Significant environmental issues of concern that were based on the baseline data compiled by the ESA Team, which took into consideration social, cultural and heritage information;
- An assessment of the public perception on the proposed development.
- Identification of Policies, Legislation and Regulations relevant to the project;
- Prediction of the likely short, medium and long-term impact of the development on the environment, including direct, indirect and cumulative impacts, and their relative importance to the design of the development's facilities;
- Identification of any mitigation actions to be taken to minimize predicted adverse impacts and provide associated costs where applicable and practical;
- Development of an environmental monitoring plan which will ensure that the mitigation measures are adhered to during the implementation phase;
- A conclusion and recommendation for the project proponent on an advisory note.

2. CHAPTER TWO: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1. INTRODUCTION

An important part of the Environmental Scoping Assessment (ESA) is identifying and reviewing the administrative, policy and legislative situation concerning the proposed activity, to inform the proponent about the requirements to be fulfilled in undertaking the proposed activities. This section looks at the legislative framework within which the proposed development will operate under. The focus is on compliance with the legislation during the planning, construction and operational phases. All relevant legislation, policies and international statutes applicable to the project are highlighted in Error! Reference source not found.**Error! Reference source not found.** below as specified in the Environmental Management Act, 2007 (Act No.7 of 2007) and the regulations for Environmental Impact Assessment as set out in the Schedule of Government Notice No. 30 (2012).

Table 1: Relevant legislation, policies and international statutes applicable to the project

Aspect	Legislation	Relevant Provisions	Relevance to the Project
The Constitution	Namibian Constitution First Amendment Act 34 of 1998	<ul style="list-style-type: none"> • Article 16(1) guarantees all persons the right to property. It therefore provides everyone a right to acquire, own and dispose of property, alone or in association with others and to bequeath such property. • Article 95(l) “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.” 	<ul style="list-style-type: none"> • The project will enable the full execution of right to practice any profession, or carry on any occupation, trade or business by availing necessary provisions such as practising any profession, or carry on any occupation, trade or business in the country. • Through implementation of the environmental management plan, the proponent will ensure conformity to the constitution in terms of environmental management and sustainability.
National Development Plans		Namibia’s overall Development ambitions are articulated in the National Vision 2030. At the operational level, five-yearly national development plans (NDP’s) are prepared in extensive consultations led by the National Planning Commission in the Office of the President. The	The proposed project will propel NDP4 targets in logistics, tourism and commodities market. Adding on, this will create employment which will work towards the NDP and Vision 2030.

Aspect	Legislation	Relevant Provisions	Relevance to the Project
		Government has so far launched a 4th NDP focusing on high and sustained economic growth, increased income equality Employment creation.	
Archaeology	National Heritage Act 27 of 2004	Section 48(1) states that “A person may apply to the Namibian Heritage Council (NHC) for a permit to carry out works or activities in relation to a protected place or protected object”	Any heritage resources discovered would require a permit from the NHC for relocation. The site is however already disturbed and semi-developed.
	National Monuments Act of Namibia (No. 28 of 1969) as amended until 1979	<ul style="list-style-type: none"> • “No person shall destroy, damage, excavate, alter, remove from its original site or export from Namibia: • Meteorites, fossils, petroglyphs, ornamental infrastructure graves, caves, rock shelters, middens, shells that came into existence before the year 1900 AD; or any other archaeological or palaeontological finds 	The proposed site of development is not within any known monument sites, both movable and immovable as specified in the Act, however in finding any materials specified in the Act, contractors on site will take the required route and notify the relevant commission.
Environmental	Environmental Management Act 7 of 2007	<ul style="list-style-type: none"> • Requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27). • Requires for 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 	This Act and its regulations should inform and guide this EIA process.

Aspect	Legislation	Relevant Provisions	Relevance to the Project
		<p>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 prescribed by the Minister.</p> <ul style="list-style-type: none"> • Details principles which are to guide all EIAs 	
	EIA Regulations GN 57/2007 (GG 3812)	<ul style="list-style-type: none"> • Details requirements for public consultation within a given environmental assessment process (GN No 30 S21). • Details the requirements for what should be included in a Scoping Report (GN No 30 S8) and EIA report (GN No 30 S15). 	This Act and its regulations should inform and guide this EIA process.
	Pollution and Waste Management Bill (draft)	<ul style="list-style-type: none"> • 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 considered an offence and is punishable. 	The project should be executed in harmony with the requirements of the act to reduce negative impacts on the surrounding environs from waste during construction or operation.
	Soil Conservation Act 76 of 1969	This act makes provision for combating and for the prevention of soil erosion, it promotes the conservation, protection and improvement of the soil, vegetation,	The Project impact on soil will rather be localised, however the Act should provide for guidelines of operation

Aspect	Legislation	Relevant Provisions	Relevance to the Project
		sources and resources of the Republic of Namibia.	during construction to prevent soil erosion and contamination during operation.
	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 management of matters to do with ecosystems protection, biosafety, and biosystematics protection on both terrestrial and aquatic systems.	Forming part of the EIA of and EMP for this Project, the proponent will consider all associated impacts, both acute and long term, and will propose methods and ways to sustain the local biodiversity.
Forestry	Forest Act 12 of 2001	<ul style="list-style-type: none"> • Tree species and any vegetation within 100m from a watercourse may not be removed without a permit (S22(1)) • Provision for the protection of various plant species. 	On site there are no trees.
Water	Water Act 54 of 1956	<ul style="list-style-type: none"> • 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 	The protection of ground and surface water resources should guide development's layout plans.

Aspect	Legislation	Relevant Provisions	Relevance to the Project
		of an activity (S23(2)). • Protection from surface and underground water pollution	
Health and Safety	Labour Act (No 11 of 2007) in conjunction with Regulation 156, 'Regulations Relating to the Health and Safety of Employees at work'.	<ul style="list-style-type: none"> • 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 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. 	The proponent will employ several people and shall 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	<ul style="list-style-type: none"> • Under this act, in section 119: "No person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health." 	The operation will ensure compliance to the terms of the Act.
Services and Infrastructure	Road Ordinance 1972 (Ordinance 17 of	<ul style="list-style-type: none"> • Width of proclaimed roads and road reserve boundaries (S3.1) 	Although the project is a major boost for the town, the commodities market and the national highways the

Aspect	Legislation	Relevant Provisions	Relevance to the Project
	1972)	<ul style="list-style-type: none"> • Control of traffic during construction activities on 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) 	proponent needs to ensure that the development do not affect the major roads within their vicinity during construction and operation phases.

3. CHAPTER THREE: RECEIVING ENVIRONMENT

3.1. SOCIO-ECONOMIC

The Karas region is one of the 14 regions in Namibia, located in the southern part of the country. Ariamsvlei is a village located in the Karas region, near the border with South Africa. The socio-economic situation in Ariamsvlei and the Karas region is influenced by various factors, including geography, demographics, and economic activities.

Geographically, the Karas region is largely semi-arid, with a desert climate and low rainfall. This limits agricultural activities and makes the region reliant on mining and tourism for economic development. Ariamsvlei is situated on the main road between Windhoek and Cape Town, making it a transit point for goods and people traveling between the two countries. The village is also home to a railway station, which facilitates the transportation of goods and minerals.

In terms of demographics, the Karas region has a relatively small population of around 90,000 people. The majority of the population is of Nama ethnicity, with smaller numbers of Afrikaners, Damara, and other groups. Ariamsvlei has a population of around 1,500 people, most of whom are employed in the transport and logistics industry, either directly or indirectly.

The economy of the Karas region is largely driven by mining, particularly the extraction of diamonds, zinc, and copper. Tourism is also an important industry, with visitors attracted to the region's natural beauty and wildlife, as well as its historical and cultural sites. Agriculture is limited by the arid climate, but there are some small-scale farming activities, particularly in the production of livestock and grapes for wine.

Overall, the socio-economic situation in Ariamsvlei and the Karas region is somewhat constrained by its geography and limited economic opportunities. However, the region has made progress in recent years, particularly in the mining sector, and there are opportunities for further growth in tourism and other industries.

3.2. CLIMATE

Ariamsvlei is located in the Karas region of Namibia, which has a desert climate characterized by hot, dry summers and mild winters. The region is largely arid, with low annual rainfall and high levels of evaporation.

The temperature in Ariamsvlei and the surrounding area can vary significantly between day and night, with hot daytime temperatures often dropping dramatically after sunset. During the summer months (November to March), temperatures can reach highs of around 40°C during the day, with night-time temperatures dropping to around 15°C. In the winter months (June to

August), temperatures are cooler, with daytime temperatures averaging around 20°C and night-time temperatures dropping to around 5°C.

Rainfall in the Karas region is low, with an average annual rainfall of around 100-200mm (4-8 inches). The majority of the rainfall occurs during the summer months, with occasional thunderstorms bringing short bursts of heavy rainfall. The winter months are generally dry, with very little rainfall.

3.3. TERRESTRIAL ECOLOGY

The subject site is located outside an urban area and thus no significant fauna and flora is present on site. The section below gives an overview of Ariamsvlei in the broader area.

3.3.1. FLORA

The flora of Ariamsvlei and the Karas region of Namibia is adapted to the arid conditions of the desert and semi-desert ecosystems in the area. The vegetation is predominantly composed of desert-adapted shrubs and grasses, with occasional trees along riverbeds and other areas with access to water.

Some of the common plant species found in the Karas region include:

1. Camelthorn
2. Shepherd's trees (*Boscia albitrunca*)
3. Nara bushes (*Acanthosicyos horridus*)
4. Wild sage (*Salvia stenophylla*)
5. Euphorbia species - various species of euphorbia are found in the Karas region, including the pencil euphorbia (*Euphorbia tirucalli*) and the naboom euphorbia (*Euphorbia ingens*).

The flora of the Karas region plays an important role in the ecosystem, providing food and habitat for a range of animal species, as well as contributing to soil stability and preventing erosion. However, the vegetation is also vulnerable to human activities such as overgrazing and habitat destruction, and efforts are being made to protect and conserve these important desert ecosystems. The dominant vegetation on the project site is grasslands and dwarf shrublands. The project site does not have any tree species. It is barren as figures 4 illustrate.

3.3.2. FAUNA

The fauna of Ariamsvlei and the Karas region of Namibia is adapted to the harsh desert and semi-desert conditions of the area. Many of the animal species found in the region are unique and have developed specialized adaptations to survive in the arid environment.

Some of the common animal species found in the Karas region include:

- Oryx (*Oryx gazella*) - also known as the gemsbok, these large antelopes are well-adapted to the desert environment and can survive for long periods without water.
- Springbok (*Antidorcas marsupialis*) - these medium-sized antelopes are known for their distinctive "pronking" behavior, in which they jump into the air repeatedly.
- Black-backed jackal (*Canis mesomelas*) - these small predators are common in the Karas region and feed on a variety of prey, including rodents, birds, and insects.
- Spotted hyena (*Crocuta crocuta*) - these scavengers are well-adapted to the desert environment and can go for long periods without water.
- Cape fox (*Vulpes chama*) - these small foxes are found throughout the Karas region and feed on small mammals and insects.
- Lizards and snakes - a variety of lizard and snake species are found in the Karas region, including the Namaqua chameleon (*Chamaeleo namaquensis*) and the black-necked spitting cobra (*Naja nigricollis*).
- Bird species found in the Karas region include the Namaqua sandgrouse (*Pterocles namaqua*), the red-billed spurfowl (*Pternistis adspersus*), and various species of raptors such as the black-breasted snake eagle (*Circaetus pectoralis*).

Human activities such as hunting, habitat destruction, and climate change can have a negative impact on the fauna of the Karas region. However, efforts are being made to protect and conserve these unique and valuable desert ecosystems, including the establishment of protected areas such as the Namib-Naukluft National Park and the Ai-Ais/Richtersveld Transfrontier Park. The project site environment is not under current use, however no wildlife on-site was observed, as figures 4 indicate.



Figure 3: Project site

3.4. PEDOLOGY AND GEOLOGY

The Ariamsvlei area and the broader Karas region of Namibia are characterized by a complex geological history that has shaped the soils and landforms in the area. The geology of the region is dominated by the Namaqua-Natal Mobile Belt, which consists of a variety of sedimentary and metamorphic rock formations.

The soils in the Karas region are highly variable, reflecting the diversity of rock types and geomorphic processes that have influenced their development. In general, the soils in the area are low in organic matter and nutrients, and are highly weathered due to the arid climate.

Some of the common soil types in the Karas region include:

- Aridisols - these are soils that have developed under arid conditions and are characterized by low organic matter content, high salinity, and poor nutrient availability.
- Entisols - these are soils that are dominated by recent deposits of unconsolidated material, such as sand and gravel.
- Vertisols - these are soils that are characterized by a high clay content and undergo dramatic changes in volume and structure in response to wetting and drying cycles.

The landforms in the Karas region are diverse, ranging from rugged mountain ranges to broad plains and sandy deserts. The most prominent landforms in the area are the Naukluft Mountains, a range of rugged peaks and deep canyons that are popular with hikers and wildlife enthusiasts.

The geology and soils of the Karas region play an important role in shaping the local ecosystem and influencing the distribution and abundance of flora and fauna in the area. However, these natural resources are also vulnerable to human activities such as mining and agriculture, which can have significant impacts on the local environment.

3.5. HYDROLOGY

The Ariamsvlei area and the Karas region of Namibia are characterized by an arid to semi-arid climate, which means that water is a scarce resource in the area. The region receives low and highly variable annual rainfall, with most precipitation occurring during the summer months from November to April.

The Karas region is drained by several ephemeral rivers, including the Fish River and the Orange River, which flow through the area only during the wet season. These rivers are an important source of water for wildlife and vegetation in the region, and also support small-scale agriculture and livestock farming.

Groundwater is another important source of water in the Karas region, particularly for rural communities and small towns. The region has a number of aquifers, including the Karoo Aquifer and the Kalahari Karst Aquifer, which provide a significant amount of the region's water resources.

However, groundwater resources in the Karas region are under threat from overexploitation and contamination from human activities such as mining and agriculture. Climate change is also expected to have significant impacts on the region's hydrology, with projections indicating that future rainfall patterns could become even more unpredictable and extreme.

Efforts are underway to improve water management in the Karas region, including the development of new groundwater sources, the promotion of water conservation and efficiency measures, and the implementation of integrated water resource management strategies.

4. CHAPER FOUR: PUBLIC CONSULTATION

4.1. OVERVIEW

The Environmental Assessment process includes a crucial aspect of public consultation, as per the EIA Regulations (2012), which defines it as a way to provide potential interested and affected parties with a chance to comment on or raise relevant issues related to specific matters. The steps to be followed during the public consultation process are detailed in Section 21 of the Regulations, and have been used to guide our process.

Formal public participation has taken place via public consultations and focal meetings, newspaper announcements to inform the public of the proposed project under consideration. The public consultation process has been guided by the requirements of Environmental Management Act (EMA) No. 7 of 2007 and the process has been conducted in terms of regulation 7(1) as well as in terms of the EMA Regulations of GN 30 of 6 February 2012 and the World Bank EIA standards and project ToR.

Its overriding goals have been to ensure transparency in decision making and to:

- Ensure stakeholder concerns are incorporated in project design and planning;
- Increase public awareness and understanding of the project and
- Enhance positive development initiatives through the direct involvement of affected people.

The aim of public participation is to establish credibility and integrity in conducting the Environmental Assessment process, to educate stakeholders about the process and opportunities for their involvement, and to establish an agreed framework for building stakeholders. This requires accessible, fair, transparent, and constructive participation at every stage of the process. Stakeholders need to be informed about the proposed project and associated issues, impacts, and mitigation measures, and the most effective manner to disseminate information should be used for this purpose.

In this section of the report, the results of consultations with various classes of stakeholders are summarized. The results of consultations with other stakeholders and community members who took part in this EIA are attached as Appendices.

The consultation was facilitated through the following means:

- A Background Information Document (BID) containing brief project description, the EIA process and notice of invitation to participate. BID was shared with stakeholders and community members.
- Invitation to participate as published in the local newspapers as shown in Table 3 below and Appendix A of this document.
- Placement of a public notice at the Ariamsvlei notice board .

Table 2: Details of public notification of the EIA study

Method	Area of Distribution	Language	Date Placed
The Villager	Country Wide	English	23 February 2023
Windhoek Observer	Country Wide	English	21 February 2023
Site notices	Notice board	English	21 February 2023

Identification of Interested and Affected Parties (I&APs)

The EIA team identified and engaged with the Interested and Affected Parties (I&APs) and other key stakeholders for the proposed project. I&APs were given the opportunity to register voluntarily with the EIA team and a database was compiled containing their names and contact information. The registration process was conducted over a period of 30 days. Annexure 5 of this report contains detailed information about the concerns raised by the I&APs.

Public Meeting

A public meeting was scheduled to be held on 28 November 2020 at the Project site. No I&APs were in attendance. However, the EIA team then conducted a door-to-door visit to distribute the BIDs to the nearby properties, proof of consultation is given in the appendices.

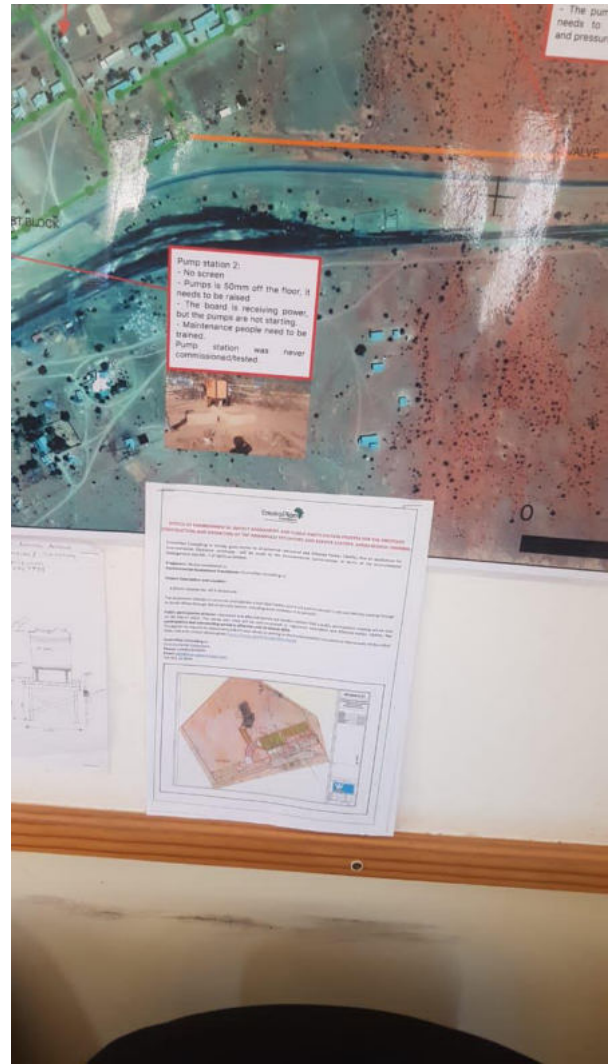


Figure 4: Site notices: Left-Ariamsvlei Settlement Offices and on site

5. CHAPTER FIVE: ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS

5.1. OVERVIEW

This chapter provides a description of the potential environmental and socio-economic impacts that may arise from the proposed fuel storage, offloading, and dispensation facility. The impacts are discussed at various stages of the project cycle, including during construction, operation, and decommissioning. The purpose of this chapter is to provide information that will guide the decision to be taken by the Ministry of Environment and Tourism regarding the Environmental Clearance Certificate (ECC) for the project.

5.2. IMPACT ASSESSMENT METHODOLOGY

The EIA team used an impact assessment matrix to evaluate all potential environmental impacts of the project. This process was in accordance with Namibia's Environmental Management Act No. 7 of 2007 and the Environmental Impacts Regulations (GN 30 in GG 4878 of 6 February 2012), which provide guidance on impact analysis. The following impact assessment criteria were identified by the team and deemed suitable for the evaluation process:

Table 3: Impact Screening Criteria

Aspect	Description
Nature	Focuses on the type of effect that the project will have on environmental components. Addresses questions related to “what will be affected and how?”
Extent	Spatial extent of the project and anticipated spatial extent of impacts indicating whether the impact will be within a limited area (on site where construction is to take place); local (limited to within 15km of the area); regional (limited to ~100km radius); national (extending beyond Namibia’s borders).
Duration	This looks at the temporal issues pertaining to time frames e.g. whether the impact will be temporary (during construction only), short term (1-5 years), medium term (5-10 years), long term (longer than 10 years, but will cease after operation) or permanent.
Intensity	Establishes whether the magnitude of the impact is destructive or innocuous and whether it exceeds set standards, and is described as none (no impact); low (where natural/ social environmental functions and processes are negligibly affected); medium (where the environment continues to function but in a noticeably modified manner); or high (where environmental functions and processes are altered such that they temporarily or permanently cease and/or exceed legal standards/requirements).

Aspect	Description
Probability	Considers the likelihood of the impact occurring and is described as uncertain, improbable (low likelihood), probable (distinct possibility), highly probable (most likely) or definite (impact will occur regardless of prevention measures).
Significance	Significance is given before and after mitigation. Low if the impact will not have an influence on the decision or require to be significantly accommodated in the project design, Medium if the impact could have an influence on the environment which will require modification of the project design or alternative mitigation (the route can be used, but with deviations or mitigation) High where it could have a “no-go” implication regardless of any possible mitigation (an alternative route should be used).

The above-mentioned criteria will be applied to determine the significance of potential impacts by considering the combination of duration, extent, and intensity/magnitude, along with factors such as probability, cumulative effects, and confidence. Significance is described as follows:

Table 4: Impact Rating Criteria

Significance Rating	Criteria
Low	Where the impact will have a negligible influence on the environment and no modifications or mitigations are necessary for the given development description. This would be allocated to impacts of any severity/ magnitude, if at a local scale/ extent and of temporary duration/time.
Moderate	Where the impact could have an influence on the environment, which will require modification of the development design and/or alternative mitigation. This would be allocated to impacts of moderate severity/magnitude, locally to regionally, and in the short term.
High	Where the impact could have a significant influence on the environment and, in the event of a negative impact the activity(ies) causing it, should not be permitted (i.e. there could be a ‘no-go’ implication for the development, regardless of any possible mitigation). This would be allocated to impacts of high magnitude, locally for longer than a month, and/or of high magnitude regionally and beyond.

5.1. IMPACT ASSESSMENT

The EIA team used the matrix above to assess the significance of each potential impact before and after implementing mitigation measures. This was done by subjecting each impact to the matrix. While some mitigation measures have been mentioned, detailed descriptions of management actions can be found in the accompanying Environmental Management Plan (EMP)..

Table 5: Environmental impact assessment matrix for the proposed service station

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
TOPOGRAPHY	With Mitigation	Alteration of existing topography	Construction & operation	Short term	Low	Local	Direct	Probable	Low
	No Mitigation	Alteration of existing topography	Construction & operation	Short term	Low	Local	Direct	Probable	Moderate
	With Mitigation	Topographic changes and Visual Impact	Construction & Operation	Medium term	Moderate	Local	Direct	Probable	Moderate
	No Mitigation	Topographic changes and Visual Impact	Construction & Operation	Medium term	Moderate	Local	Direct	Probable	High
SOILS	With Mitigation	Loss of usable topsoil material	Construction	Long term	Low	Local	Direct	Probable	Moderate
	No Mitigation	Loss of usable topsoil material	Construction	Long term	Moderate	Local	Direct	Highly probable	High
	With Mitigation	Spillages and leakages of fuel, oil and other hazardous substances ferried by trucks.	Construction and Operations	Long term	Moderate	Local	Direct	Probable	Moderate
	No Mitigation	Spillages and leakages of fuel, oil and other hazardous substances ferried by trucks.	Construction and Operations	Long term	Moderate	Local	Direct	Highly probable	High
	With Mitigation	Aboveground tanks leakages and fuel spillages during tank	Operation	Long Term	Moderate	Local	Direct	Probable	Moderate

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
		and refill.							
	No Mitigation	Aboveground tanks leakages and fuel spillages during tank and vehicles refill.	Operation	Long Term	High	Local	Direct	Probable	High
	With Mitigation	Contamination to soil from waste disposal	Construction and Operations	Long term	Moderate	Local	Direct	Improbable	Low
	No Mitigation	Contamination to soil from waste disposal	Construction and Operations	Long term	Moderate	Local	Direct	Probable	Moderate
LAND CAPABILITY	With Mitigation	Land utilisation for the benefit of the people	Operations	Long term	High	National	Indirect	Probable	Moderate
	No Mitigation	Land utilisation for the benefit of the people	Operations	Long term	High	National	Indirect	Probable	Moderate
	With Mitigation	Decreased in vegetated land (biodiversity zones) around the town.	Construction and Operations	Long term	Low	Local	Direct	probable	Low
	No Mitigation	Decreased in vegetated land (biodiversity zones) around the town.	Construction and Operations	Long term	Moderate	Local	Direct	probable	Moderate
GROUND AND SURFACE	With Mitigation	Pollution of underground aquifers	Construction and	Medium term	Moderate	Local	Direct	Improbable	Moderate

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
WATER		from contaminated seepage and fuel storage tank leakages	Operations						
	No Mitigation	Pollution of underground aquifers from contaminated seepage and fuel storage tank leakages	Construction and Operations	Medium term	High	Local	Direct	Improbable	High
	With Mitigation	Groundwater sources and soil may be polluted by construction activities	Construction	Short term	Moderate	Local	Direct	probable	Moderate
	No Mitigation	Groundwater sources and soil may be polluted by construction activities	Construction	Short term	High	Local	Direct	probable	High
	With Mitigation	Groundwater source potentially contaminated by sewerage waste	Operations	Long term	Low	Local	Direct	probable	Low
	No Mitigation	Groundwater source potentially contaminated by sewerage waste	Operations	Long term	Moderate	Local	Direct	probable	Moderate

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
	With Mitigation	Potential pollution of groundwater from fuel storage tank leakages or insufficient control of wastewater and oils on site.	Operations	Long term	Moderate	Local	Direct	Probable	Moderate
	No Mitigation	Potential pollution of groundwater from fuel storage tank leakages or insufficient control of wastewater and oils on site.	Operations	Long term	High	Local	Direct	Highly probable	High
	With Mitigation	Groundwater source and soil may be polluted by construction activities	Construction	Short term	Moderate	Local	Direct	probable	Moderate
	No Mitigation	Groundwater source and soil may be polluted by construction activities	Construction	Short term	High	Local	Direct	probable	High
	With Mitigation	Increased sediment load from exposed surfaces	Construction	Short term	Low	Local	Direct	Probable	Low
	No Mitigation	Increased sediment load from exposed	Construction	Short term	Moderate	Local	Direct	Probable	Moderate

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
		surfaces							
	With Mitigation	Stormwater generation from the open surface area for parking of vehicles will be created, the large open surface area may create stormwater which may result in pollution.	Construction and operations	Long term	Moderate	Local	Direct	Probable	Moderate
	No Mitigation	Stormwater generation from the open surface area for parking of vehicles will be created, the large open surface area may create stormwater which may result in pollution.	Construction and operations	Long term	High	Local	Direct	Highly Probable	Moderate
	With Mitigation	Increase in surface water run- off from a large open surface area on site because of vegetation removal	Construction and operations	Short term	Moderate	Local	Direct	Improbable	Low
	No Mitigation	Increase in surface water run- off from a	Construction and	Short term	Moderate	Local	Direct	Improbable	Moderate

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
		large open surface area on site because of vegetation removal	operations						
AIR QUALITY	With Mitigation	Generation of dust causing a nuisance to neighbouring residents and businesses	Construction	Short term	Low	Local	Direct	Probable	Low
	No Mitigation	Generation of dust causing a nuisance to neighbouring residents and businesses	Construction	Short term	Moderate	Local	Direct	Probable	Moderate
	With Mitigation	Fuel vapour and noxious smells may be released during AST refill, through vent pipes and during vehicle refilling processes.	Operations	Long Term	Moderate	Local	Direct	Probable	Moderate
	No Mitigation	Fuel vapour and noxious smells may be released during AST refill, through vent pipes and during vehicle refilling processes.	Operations	Long Term	Moderate	Local	Direct	Probable	High
	With Mitigation	Nuisance from construction machinery	Construction and	Long term (operation)	Low	local	Direct	Probable	Low

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
		and vehicular noise.	operation						
	No Mitigation	Nuisance from construction machinery and vehicular noise.	Construction and operation	Long term (operation)	Moderate	local	Direct	Probable	Moderate
	With Mitigation	Visual impacts due to use of unsustainable disposal methods	Construction and Operations	Long term	Low	Local	Direct	Probable	Low
	No Mitigation	Visual impacts due to use of unsustainable disposal methods	Construction and Operations	Long term	Moderate	Local	Direct	Probable	Moderate
FAUNA	With Mitigation	Loss of habitat and clearing or damage to vegetation	Construction	Short Time	Moderate	Local	Direct	Highly Probable	Moderate
	No Mitigation	Loss of habitat and clearing or damage to vegetation	Construction	Short Time	High	Local	Direct	Highly Probable	High
FLORA	With Mitigation	Proliferation of invasive species Establishment of bush encroachers in disturbed areas.	Construction and Operations	Long Term	Low	Local	Direct	Probable	Low
	No Mitigation	Proliferation of invasive species Establishment of bush encroachers in disturbed areas.	Construction and Operations	Long Term	Low	Local	Direct	Probable	Moderate

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
	With Mitigation	Illegal collection of firewood	Construction and Operations	Long Term	Low	Local	Direct	Probable	Low
	No Mitigation	Illegal collection of firewood	Construction and Operations	Long Term	Low	Local	Direct	Probable	Low
	With Mitigation	Clearing of land may lead to destruction of protected vegetation and loss of biodiversity. Loss of mature and protected tree species due to clearing of land for parking space.	Construction	Short Term	Low	Local	Direct	Highly Probable	Low
	No Mitigation	Clearing of land may lead to destruction of protected vegetation and loss of biodiversity. Loss of mature and protected tree species due to clearing of land for parking space.	Construction	Short Term	Moderate	Local	Direct	Highly Probable	Moderate
	With Mitigation	Uncontrolled/accidental fires	Construction and Operations	Long Term	High	Local	Direct	Probable	Moderate

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
	No Mitigation	Uncontrolled/accidental fires	Construction and Operations	Long Term	High	Local	Direct	Probable	Moderate
SOCIO-ECONOMIC	With Mitigation	Temporary employment prospects in the area	Construction	Short Term	Low	Local	Direct	Probable	Moderate Positive
	No Mitigation	Temporary employment prospects in the area	Construction	Short Term	Low	Local	Direct	Probable	Moderate Positive
	With Mitigation	Security concerns due to increased number of persons in areas	Construction and Operations	Long	High	Local	Direct	Probable	Moderate Positive
	No Mitigation	Security concerns due to increased number of persons in areas	Construction and Operations	Long	High	Local	Direct	Probable	Moderate Positive
	With Mitigation	Job creation permanent workforce	Operations and constructions	Long term	Moderate	Local	Direct	Probable	Moderate Positive
	No Mitigation	Job creation permanent workforce	Operations and constructions	Long term	Moderate	Local	Direct	Probable	Moderate Positive
	With Mitigation	Improved transport infrastructure and services	Operations	Long Term	Moderate	National	Direct	Highly Probable	High Positive

Environmental Impact	Element	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance
	No Mitigation	Improved transport infrastructure and services	Operations	Long Term	Moderate	National	Direct	Highly Probable	High Positive
	With Mitigation	Employment and local procurement.	Construction and Operations	Long Term	Moderate	Local	Direct	Probable	Moderate Positive
	No Mitigation	Employment and local procurement.	Construction and Operations	Long Term	Moderate	Local	Direct	Probable	Moderate Positive

5.2. RECOMMENDATION

Based on the Environmental Assessment it is concluded that most of the impacts identified can be addressed through the recommended mitigation and management actions for both the construction and operation phases of the fuel retail facility.

Should the recommendations included in this report and the EMP be implemented the significance of the impacts can be reduced to reasonably acceptable standards and durations. All developments could proceed provided that general mitigation measures as set out are implemented as a minimum.

In this respect it is recommended that the **Proposed Construction and Operation Of The Ariamsvlei Trcukport And Service Station, Karas Region: Namibia** receives an environmental clearance certificate, provided that the recommendations described in this report and the EMP are implemented

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