



Scoping Assessment

An Environmental Scoping Assessment Report to Support
an Application for an Environmental Clearance Certificate
(ECC) to Permit the Construction and Operation of a Fuel
Retail Outlet and Related Amenities

On Portion 1 of Farm Witwater No. 139
Maltahöhe, Hardap Region

April 2025

INFORMATION SHEET

Project Title Name	<p>An Environmental Scoping Assessment Report to Support an Application for an Environmental Clearance Certificate (ECC) to Permit the Construction and Operation of a new Fuel Retail Outlet and Related Amenities on Portion 1 of Farm Witwater No. 139</p> <p>Maltahöhe District Hardap Region</p>
MEFT Application No.	<p>APP-005639</p>
Applicant /Promotor	<p>Nicolene Steyn (Mrs) Box 221 MALTAHOHE Hardap Region Namibia</p>
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Report Date	<p>April 2025</p>

EXECUTIVE SUMMARY

Ekwao Consulting ('**Ekwao**') has been appointed by Nicolene Steyn (Mrs) ('**the promotor**') who is proposing to develop and to operate a Fuel Retail Outlet (FRO). The said FRO is one component of a major development comprising of a restaurant, a medium sized Spar franchised shop and ample parking. The project site is on Portion 1 of Farm Witwater No. 139, at the intersection of district road D854 and tourist route C19 in the rural district of Maltahöhe, Hardap Region. Portion 1 measures about 151 500 m² and the whole development will occupy a footprint of 2 752 m² or 1.82% of total land premises. The promotor has the proprietary right on Farm Witwater.

The FRO is the only component of the entire development which requires an Environmental Clearance Certificate (ECC) for its construction and operation. The promotor has been granted a Letter of Intent (LOI) by the Ministry of Industries, Mines and Energy (MIME). An LOI is only granted once MIME has reviewed and assessed a Site Viability Assessment (SVA) report justifying both the need and economic sustainability of establishing a FRO at that specific site.

Farm Witwater Portion is ±130 km from Maltahöhe and ±50 km to the Sesriem Settlement making the facility strategically located to serve a significant number of hospitality establishments in the Daweb Electoral Constituency as well as hundreds of tourists travelling on the C19 route, to and from Sossusvlei - one of Namibia's top tourist destinations.

Environmental benefits that will accrue from the development include employment opportunities, skills transfer, taxes to NamRa, reduced traffic on both district and tourist roads; reduced maintenance of gravel roads in the district, reduced dust pollution / gaseous emissions as well as less noise, and reduced chances of incidents and accidents.

The construction phase will entail the installation of two underground storage tanks with a total storage capacity of 96 m³ – one tank for automobile diesel oil (ADO) and another for unleaded petrol (ULP). A canopy covers a forecourt where fuel pumps are operated from a slightly elevated island section. During the operation wastewater from the forecourt is channelled to an underground chamber fitted with an oil/separator. This process involves separating oil and grease from other contaminants, treating the wastewater to remove pollutants.

Compliance with applicable SANS standards and specifications will be implemented during the construction activities.

The study has been conducted to identify the nature of impacts which the proposed development will bring to bear to the receiving environment. Given the location and nature of the development, impacts has to be expected on the natural environment, however, such impacts can be reduced or minimised if the measures provided in the EMP are implemented.

The impacts that are common to both phases of the development are health and safety, waste generation, noise pollution and visual. Noise pollution should at all times be kept under the minimum prescribed threshold so as not to cause nuisance to guests and tourists using adjacent roads around the construction site. Any waste generated must be removed from the site and disposed of in an appropriate manner, or re-used or recycled wherever possible. Hazardous waste must be disposed of at an approved hazardous waste disposal site and records kept on file.

The study has found that the environmental impacts associated with the construction and operation of the FRO and the whole development can be effectively mitigated provided the measures recommended in the EMP are adhered and complied with.

It is recommended that an ECC be granted to the applicant (Mrs Nicolene Steyn) to construct and operate a FRO on Portion 1 of Farm Witwater No. 139 subject to the conditions and terms which the EC may wish to impose.

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ABBREVIATIONS AND ACRONYMS

TERM	EXPANSION
ADO	Automobile Diesel Oil
BAT	Best Available Technology
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act (Act No. 7 of 2007)
EMP	Environmental Management Plan
EMS	Environmental Management System
FRO	Fuel Retail Outlet
HDPE	High Density Polyethylene
HRC	Hardap Regional Council
HSSEQC	Health, Safety, Security, Environment, Quality – Management System
IAPs	Interested and Affected Parties
LOI	Letter of Intent
m²	Square meters
m³	Cubic meter
MEFT	Ministry of Environment, Forestry and Tourism
MIME	Ministry of Industries, Mines and Energy
MSDS	Material Safety Data Sheet
NamRa	Namibia Revenue Authority
NSI	Namibia Standards Institute
OEC	Office of the Environmental Commissioner
OPEX	Operational Expenditure
CAPEX	Capital Expenditure
PPE	Personal Protective Equipment
PV	Photovoltaic
SANS	South African National Standards
SAR	Scoping Assessment Report
SCADA	Supervisory Control and Data Acquisition
SHE	Safety, Health & Environment
SME	Small and Medium Enterprises
SVA	Site Viability assessment
UPL	Unleaded Petrol
USTs	Underground Storage Tank(s)
VOC	Vapour Organic Compounds
WHO	World Health Organisation

DEFINITIONS

TERM	EXPANSION
Assessment	The process of collecting, organising, analysing, interpreting and communicating information relevant to decision making
Business waste	Means any waste generated on any premises used for non-residential purposes, but excluding agricultural properties and small holdings, and does not include general waste, household hazardous waste, garden waste, bulky waste, builder's waste, industrial waste, hazardous waste and health care risk waste
Construction Phase	The phase of a project preceding the Operation Phase, during which project facilities and infrastructure are assembled and installed on their foundations, and connected and tested, to ensure that they operate as designed.
Cumulative Impacts	In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
Disposal	Means the discharge, depositing, dumping, spilling, leaking, placing of waste on or at any premises or place set aside by the Council for such purposes, and "dispose" shall have a similar meaning;
Emergency Plan	An emergency plan is a plan in writing that, on the basis of identified potential incidents at the installation together with their consequences, describes how such incidents and their consequences should be dealt with, both on-site and offsite.
Environment	As defined in the Environmental Assessment Policy and Environmental Management Act - "land, water and air; all organic and inorganic matter and living organisms as well as biological diversity; the interacting natural systems that include components referred to in sub-paragraphs, the human environment insofar as it represents archaeological, aesthetic, cultural, historic, economic, paleontological or social values".
Environmental Clearance Certificate	A certificate and associated conditions issued in terms of the Environmental Management Act, authorizing a listed activity to be undertaken
Environmental Impact	A description of the potential effect or consequence of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space.
Environmental Management Plan (EMP)	A working document which contains site project specific plan developed to ensure that environmental management practices to eliminate and control environmental impacts are followed during the developmental phase of that site, project and or facility and would normally consist of construction phase, operational phase and decommissioning phases.
General Waste	Means any waste generated on or at any premises used - (a) for residential purposes, and includes agricultural properties and small holdings; or (b) as public and/or private facilities and institutions but does not include garden waste (unless specifically determined or authorised by Town Council subject to any conditions or limitations the Council may impose), bulky waste, business waste, builder's waste, industrial waste, hazardous waste and health care risk waste.
Hazardous waste	Means - (a) any waste containing, or contaminated by, poison; (b) any corrosive agent; (c) any flammable substance having an open flash-point of less than 90 degrees Celsius; (d) an explosive or radioactive material and substance; (e) any chemical or any other waste that has the potential even in low concentrations to have a significant adverse effect on public health or the environment because of its inherent toxicological, chemical, ignitable, corrosive, carcinogenic, injurious and physical characteristics; (f) any waste consisting of a liquid, sludge or solid substance, resulting from any manufacturing process, industrial treatment or the pre-treatment for disposal purposes of any industrial or mining liquid waste, which in terms of any law, order or directive relating to drainage and plumbing may not be discharged into any drain or sewer.
Industrial waste	Means any waste generated as a result of business, commerce, trade, wholesale, retail, professional, manufacturing, maintenance, repair, fabricating, processing or dismantling activities, but does not include general waste, garden or bulky waste, builder's waste, business waste, hazardous waste or health care risk waste.
Scoping Process	Scoping is that process of the EIA during which key environmental issues and impacts that have to be addressed are identified, and ultimately defining the scope and focus of the assessment.
Operational Phase	The phase of a project during which the newly constructed tanks, pipelines, gantries and associated facilities are operated.
Pollution	Means any change in the environment caused by – (a) any waste, substance or matter; or (b) noise, odour, dust or heat, emitted from or caused by any activity, including the storage or treatment of any waste, substance or matter, building and construction, and the provision of any service, whether engaged in by any person or an organ of state if that change has an adverse effect on public health or well-being of people.
Public Participation Process	The process of involving all affected parties in the design, planning and operation of a project. The process requires that the proponents give the parties to be consulted notice of the matter in sufficient form and detail to allow them to prepare their views on the matter. They are also given a reasonable amount of time to prepare their views and an opportunity

	to present their views to the proponents, who consider the views presented, fully and impartially.
Recovery	Means the process or act of reclaiming or diverting from waste any materials, products or by-products for the purposes of being reused, or collected, processed and used as a raw or other material in the manufacture of a new, recycled or any other product, but excluding the use for purposes of energy generation;
Recyclable waste	means waste which has been separated from the waste stream, and set aside for purposes of recovery, reuse or recycling;
Waste Recycling	Means the process or act of subjecting used or recovered waste materials, products or by-products to a process or treatment of making them suitable for beneficial use and for other purposes, and includes any process or treatment by which waste materials are transformed into new products or base materials in such a manner that the original waste materials, products or by-products may lose their identity, and which may be used as raw materials for the production of other goods or materials.
Waste Recycling Facility	Means a facility which receives any waste, materials, products or by-products for the purposes of recovery, reuse or recycling, and includes a buy-back centre.
Waste Reduction	Means the process or act of reducing the nature, type, quality, quantity, volume or toxicity of any waste generated, and "reduce" shall have a similar meaning
Refuse container	Means any receptacle or other container, including a skip, stipulated or approved by the Town Council from time to time, whether supplied by the Council or not, for the storage, depositing and disposal of waste.
Waste Re-use	Means the process or act of sorting and separating, at the point of origin, different materials found in any waste in order to promote and facilitate recovery, reuse and recycling of materials and resources, and "separate" shall have a similar meaning;
Storage	Means the temporary storage or containment of any waste for a period of less than 90 days after its generation and prior to its collection for recovery, reuse, recycling, treatment or disposal;
Waste	Means any substance or matter whether solid, liquid or any combination thereof, irrespective of whether it or any constituents thereof may have value or other use, and includes – (a) any undesirable, rejected, abandoned or superfluous matter, material, residue of any process or activity, product, by-product; (b) any matter which is deemed useless and unwanted; (c) any matter which has been discarded, abandoned, accumulated or stored for the purposes of discarding, abandoning, processing, recovery, reuse, recycling or extracting a usable product from such matter; or (d) products that may contain or generate a gaseous component
Sustainable Development	"Development that meets the needs of the current generation without compromising the ability of future generations to meet their own needs and aspirations" –World Commission on Environment and Development (1987). "Improving the quality of human life while living within the carrying capacity of supporting ecosystems" - Caring for the Earth: A Strategy for Sustainable Living, by the International Union for Conservation of Nature (IUCN), the United Nations Environment Programme and the World Wide Fund for Nature (1991).

1. PROJECT OVERVIEW

1.1 Introduction

The promotor whose particulars are in **Table 1** would like to construct and to operate a new fuel retail outlet (FRO) and related amenities.

In terms of the Environmental Management (EMA), and Environmental Impact Assessment (EIA) Regulation as per Government Notice No. 30 of 2011, fuel is listed in the category of hazardous substance whose storage and handling require an Environmental Clearance Certificate (ECC).

The Office of the Environmental Commissioner (OEC) in the Ministry of Environment, Forestry and Tourism (MEFT) is the statutory agency responsible for the implementation of EMA.

Ekwa Consulting was appointed by the promotor to facilitate the ECC authorisation process for the project.

1.2 The Proponent

Details of the proponent are provided in **Table 1**.

Table 1: Particulars of the Promotor

Details of the Promoter	
Name	Nicolene Steyn (Mrs)
Namibia ID No.	84111310301
Trading Name	Sossus Express
GPS Coordinates	Longitude: 24° 39' 26" Latitude: 15° 59' 12"
Contact Person	Nicky Steyn (Mr)
Designation of Contact Person	Project Manager Tel: 063 293 416 Cell 081 232 6721 Email: tsauchab@icloud.com
Postal Address	Box 221 Maltahöhe Namibia
Physical Address	Portion 1 of Farm Witwater No. 139 Maltahöhe Hardap Region Namibia

1.3 Purpose of the Scoping Assessment Study

The aim of the EIA study is to examine and analyse those impacts – both positive and negative that the proposed project will bring to bear on the receiving environment - biological, physical and socio-economic environments. Once identified impacts are assessed, mitigation or remedial measures are formulated in an Environmental Management Plan (EMP) report to mitigate such negative impacts, and where impacts are positive, measures are proposed to enhance such benefits to accrue to the broader members of the community.

EMA requires that all listed developmental projects be subjected to an EIA process so as to elucidate the potential adverse impacts associated with the project and to devise appropriate mitigation measures. It is in response to this provision of EMA that this Scoping Assessment Report (SAR) has been prepared.

1.4 Project Need and Justification

The project need and justification has been described from three perspectives:

- Site Viability Assessment;
- Desirability Justification, and
- Social Justification.

1.4.1 SITE VIABILITY ASSESSMENT

To ensure that there is fair competition in the fuel retail space in the country; MIME has introduced guidelines on the construction of new FRO. Any entrepreneur who aspired to construct a new FRO is required to conduct a **site viability assessment** (SVA) which has to be submitted to MIME accompanied by a comprehensive business plan.

On receipt of the said SVA report from a prospective entrepreneur, MMEI would conduct its own assessment on that specific site. An applicant whose site was found viable in terms of the below listed criteria is issued a **Letter of Intent (LOI)** by MIME:

- The need for a new FRO at that specific locality;
- Expected volumes or storage tank capacity to be installed;
- Current and projected traffic volume at the specific locality; and
- Proximity to existing fuel outlets.

Only an applicant who is in possession of an LOI issued by MIME can proceed to the next stage of conducting an EIA, getting drawings for the FRO prepared and is eligible to apply for a FRL (Fuel Retail Licence). No new FRO will be constructed without a valid LOI and RFL.

An applicant whose site does not meet MIME’s evaluation criteria is not issued an LOI and the application is accordingly decline.

MIME has issued a LOI to the promotor, which demonstrates, both the need and justification for the project. Additionally, the FRO will be developed on land owned by the promotor.

1.4.2 DESIRABILITY JUSTIFICATION

The FRO proposed by the promotor is a component of a large project that includes the construction of medium-sized Spar franchised shop and a restaurant – a capital investments upwards of N\$40 million, (see the breakdown in **Table 4**). The project has the potential to reduce the time and cost that the surrounding farmers and lodge owners spend driving to and from Maltahöhe or Mariental to fill up their utility vehicles and to procure supplies for their hospitality establishments.

A FRO at the intersection of C19 and D854 is therefore strategically located to serve a significant number of lodge operators in the district, tourists travelling on the C19 route to and from Sossusvlei and the general public with these additional environmental benefits:

- Reduced traffic on both district and tourist roads;
- Reduced maintenance of gravel roads in the district;
- Reduced dust pollution and gaseous emissions as well as less noise, and
- Reduced potential risk for road incidents and accidents.

1.4.3 SOCIAL JUSTIFICATION

The 5th National Development Plan (NDP 5) represents a new approach by GRN to promote sustainable and inclusive development in Namibia focusing on:

- Creating jobs and improvement of livelihoods;
- Poverty alleviation;
- Expanding of local infrastructure;
- Transitioning to a low-carbon economy;
- Transforming urban and rural spaces; and
- Improving education and training.

The construction and operation of a fuel site at the specific location as identified by the promotor will contribute to all of those above key focus areas.

1.5 Triggered Activities

In terms of EMA, the envisaged project has triggered listed activities as listed in **Table 2**:

Table 2: Triggered Activities

Activity Category	Expansion
Energy Generation, Transmission and Storage Activities	<p>Paragraph 1(c)</p> <ul style="list-style-type: none"> • The construction of facilities for refining of gas, oil and petroleum products. <p>(The project entails the construction, operation and decommissioning of a FRO and related activities.)</p>
Waste Management, Treatment, Handling and Disposal Activities	<p>Paragraph 2.1</p> <ul style="list-style-type: none"> • Disposal of waste <p>Paragraph 2.2</p> <ul style="list-style-type: none"> • Any activity entailing a scheduled process referred to in the Atmospheric Pollution Prevention Ordinance, 1976 <p>Paragraph 2.3</p> <ul style="list-style-type: none"> • Temporary storage of waste generated during demolition, construction and maintenance activities.

Activity Category	Expansion
	<ul style="list-style-type: none"> Handling of waste, both non-hazardous and hazardous during the construction and operation phases of the facility.
Forestry Activities	<p>Paragraph 4</p> <ul style="list-style-type: none"> The clearance of forestry areas, deforestation, afforestation, timber haversting or any other related activity that requires authorisation in terms of the Forestry Act, 2001 (Act No. 12 of 2001) or any other law
Hazardous Substance Treatment, Handling and Storage	<p>Paragraph 9.2</p> <ul style="list-style-type: none"> Any process or activity which requires a permit, licence or other form of authorisation, or the modification of changes to existing facilities for any process or activity which requires a amendment of an existing permit, licence or authorisation or which requires a new permit. <p>Paragraph 9.3</p> <ul style="list-style-type: none"> The bulk transportation of dangerous goods using pipeline, funiculars or conveyors with a throughout capacity of 50 tons or 50 cubic meters or more per day. <p>Paragraph 9.4</p> <ul style="list-style-type: none"> The storage and handling of dangerous goods, including diesel, petrol, liquid petroleum, gas or paraffin, in containers with a capacity of more than 30 m³ at any one location. Temporary storage of hazardous products during the construction phase, e.g. fuel storage for use by construction vehicles. <p>Paragraph 9.5</p> <ul style="list-style-type: none"> 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
Infrastructure	<p>Paragraph 10.1 (a)</p> <ul style="list-style-type: none"> The construction of oil, water, gas or other bulk supply pipelines to the proposed development. <p>Paragraph 10.1 (e)</p> <ul style="list-style-type: none"> The construction of any structure below any high water mark of the se

1.6 The Project Phases

There are at least three phases associated with this project. The first phase entails the planning, designing and securing all statutory permits and or licenses that are required for the fuel facility. Generally, there are no environmental impacts associated with this phase.

The construction and operational phases are phases of the project associated with activities intrusive in nature and with the potential to impact negatively on the biological, physical and social environment, i.e. site clearing, excavations, trenching, waste generation, chemical spills or leaks, etc.

Presented in **Table 3** below are some of the activities associated with the aforesaid phases.

Table 3: Project Phases and Associated Activities

Phase	Expansion
Planning/Designing	During this phase, the promotor is required to carry out the planning and to secure all statutory permits and or licenses, e.g. Letter of Intent from MIME, ECC from MEFT, Fuel Retail Licence from MIME, as well as having drawings prepared and approved by the relevant authority where applicable.
Construction (including decommissioning post construction)	<ul style="list-style-type: none"> Site clearing, preparation and earthworks or civil works; Civil works required for the FRO and associated infrastructure; Construction of infrastructure for the fuel (petrol & diesel) retail facility; Installation of underground storage tanks (USTs); Construction of a forecourt and refueling area; Installation of the pipeline networks, pumping system, vent pipes, etc. electrical installations and wiring of several components; An onsite sewerage system; Access roads in and out of the facility as well as internal routes, etc.
Operation (including routine maintenance and renovations)	<ul style="list-style-type: none"> Fuel offloading from road tankers discharging directly into USTs; Dispersal of fuel using a system of pipes, filters and pumps into client vehicles; Monitoring fuel stock levels in USTs or tank dips; Fuel volume reconciliations on a daily basis; Carrying out routine maintenance as well as renovation from time to time; Keeping the facility clean, tidy and hazard-free; and Complying with safety standards applicable to FROs.

1.7 EIA Objectives

The main objective of the EIA is to identify and to evaluate potential risks and or impacts which the envisaged project can have on the receiving environment. The information gathered on the project is then presented to the OEC, so as to allow the Environmental Commissioner to make an informed decision on whether to grant an ECC and allow the project to proceed to the implementation phase or to refuse the ECC.

The main objectives of this EIA are therefore:

- To establish the baseline conditions about the project site and its surrounds;
- To conduct a public participation process as part of the impact assessment process during which stakeholders and IAPs are accorded an opportunity to participate in the EIA process;
- To identify and assess social impacts that may result from the construction, operation and closure of the proposed facility,
- To develop an EMP with a set of recommended mitigation measures or management actions to avoid negative impacts, and, where that is not possible, to reduce the effects of negative impacts and to provide measures where the proposed facility can provide positive benefits, and
- To fully integrate the mitigation measures in the design, engineering, planning and execution of the proposed facility.

1.8 Project Screening

To meet the objectives stated above, and to comply with the provisions of EMA, an environmental scoping assessment for the project was conducted by Ekwao Consulting. The information on the project was largely gathered through:

- Meeting and speaking with the project promoter at the project site;
- Physical inspection and observation of the project site
- Physical inspection of the surroundings up to a radius of 2 000 m (2 km from the project site);
- Desk studies;
- Running adverts in the local newspapers;
- Posting EIA Notices at the project site; and
- Receiving comments and inputs from IAPs.

Following the site inspection, a background information document (BID) on the project was prepared and submitted to OEC, which allocated the following application number to the project: **APP-005639**.

In terms of the screening notice issued by OEC, these reports have to be prepared and submitted:

- A Scoping Assessment Report;
- An Environmental Management Plan (EMP)
- Public Participation Process (PPP), and
- A Consent letter from the relevant authority.

2. PROJECT DESCRIPTION

2.1 Project Location and Footprint

The FRO is developed in on a commercial farm, being Portion 1 of Farm Witwater No. 139 in the Maltahöhe district. Portion 1 which accommodates the development has been subdivided from Farm Witwater and measures about 151 500 m². The development consists of four components as illustrated in **Table 4** below. The fuel service is the only component that requires an ECC prior to starting with the construction.

The FRO will comprise of two underground storage tanks (USTs) – one for diesel and another one for unleaded petrol. The total storage capacity envisaged is 96 m³ (96 000 litres). The project footprint is less than 2% of the total land allocated for the development.

Table 4: Project Components

Component	Floor Area (m ²)	Portion 1 Size (m ²)	% Coverage
Fuel Service	500	151 500	0.33%
Restaurant	77	151 500	0.05%
Grocer Shop (Mini Spar)	675	151 500	0.45%
Paved Parking Area	1 500	151 500	0.99%
Total	2 752	151 500	1.82%

The project site is at the intersection of district road D854 and tourist route C19. The town of Maltahöhe is ±130 from the site with access provided via C19. The settlement of Sesriem and the popular Sossusvlei are to the north about 70 km and 100 km respectively. The site will therefore serve tourists travelling to and from the Namib Rand Nature Reserve and Namib-Naukluft National Park. The Sossusvlei area with its iconic red dunes and dead trees is ranked among the top five tourist destinations in Namibia visited by thousands of tourists each year. The project location is depicted on Google earth images presented in Figures 1 & 2.



Figure 1: Google Earth Image Showing Project Site



Figure 2: Google Earth Image Showing Project Surrounds

2.2 Project Components and Layout

A layout perspective for the whole development as prepared by the architect is presented in Figures 3 and 4. The EIA is concerned with the fuel service section dotted red in Fig. 3. Given the scale and scope of the project, the scoping assessment has been confined to Portion 1 which measures about 151 500 m², and the immediate surrounds up to a radius of 2 000 m.

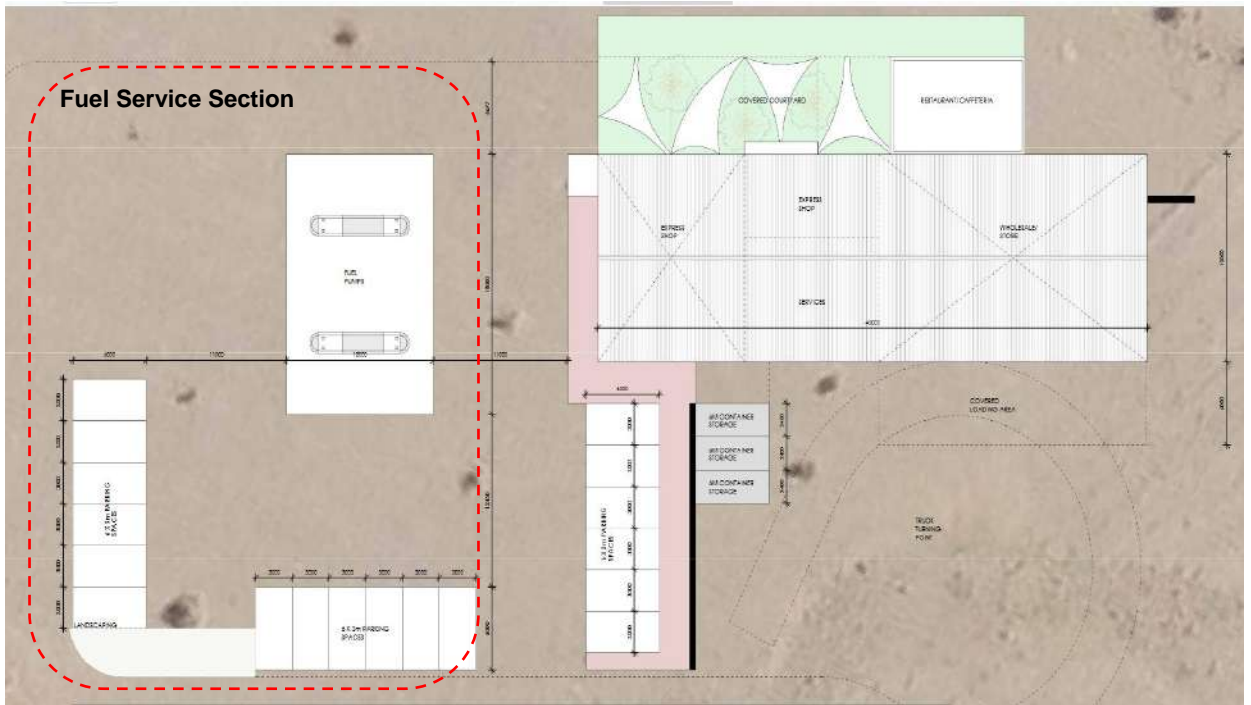


Figure 3: A Perspective of the Proposed Development

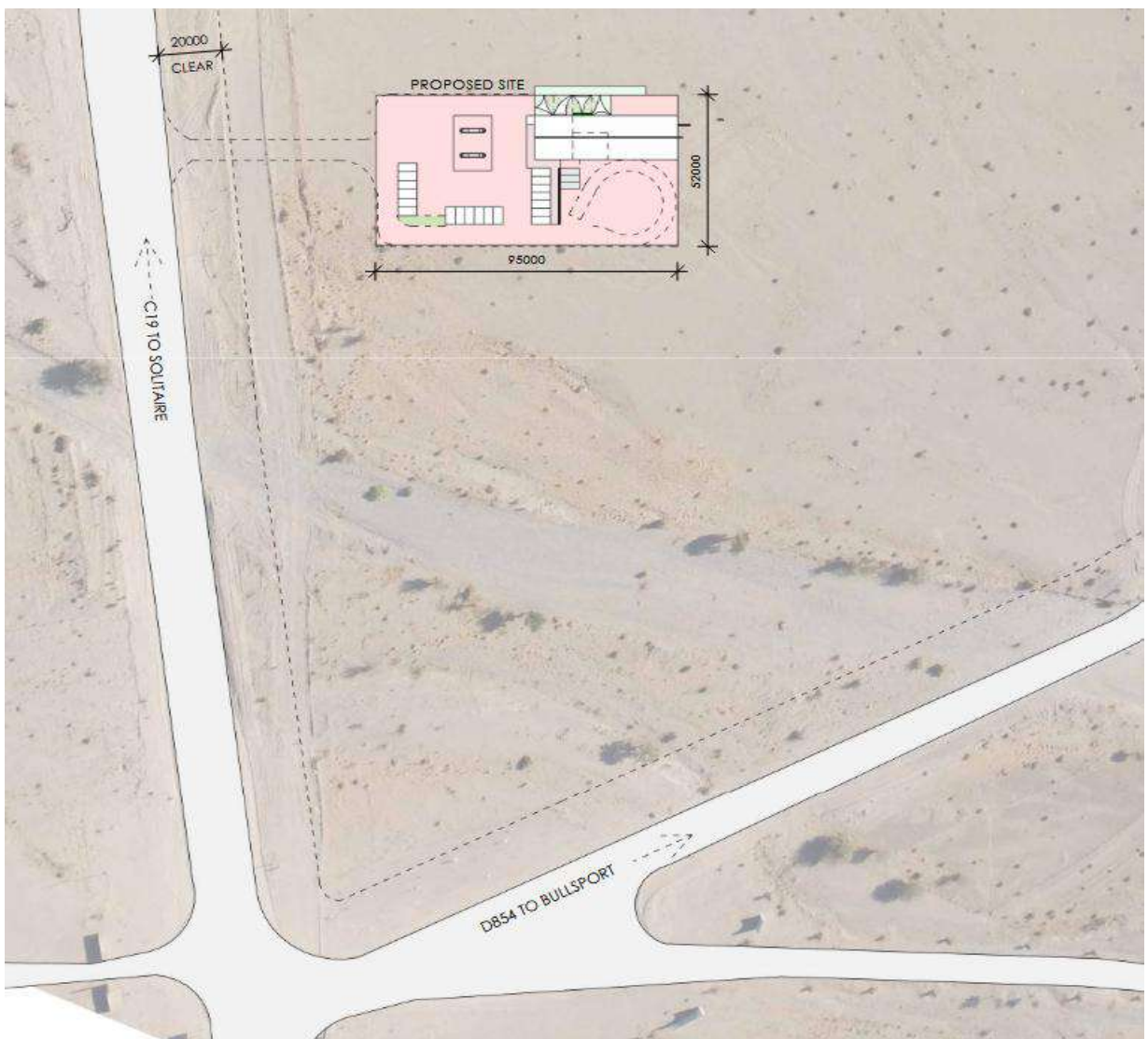


Figure 4: Layout of the Proposed Development

2.3 Project Details

The project entails the construction of a FRO comprising of two underground storage tanks (USTs) - one for diesel and another one for petrol. The total storage capacity envisaged is 96 m³ (96 000 litres). Generally, the scope of activities will consist of the following:

- Excavation and installation of two USTs with the total capacity of 96 m³;
- The development of a convenience store, kitchen, offices and change rooms;
- Associated underground pipework;
- A forecourt with four pump islands;
- A canopy to covering the forecourt area, and
- Adequate paved parking bays.

Since Namibia is still developing its own standards and specifications for FROs, the South African National Standards codes (SANS), are used in the country with these guidelines or specs:

- The tanks are manufactured according to SANS code 1535 and placed on a high density polyethylene (HDPE) liner within the excavation;
- The tanks should be installed to minimum depths of 3.2 m below surface or at depth specified by the engineer;
- The tanks will be directly filled at filler points that are located underground in sealed manholes, designed in such a manner that any accidental spills can be contained;
- Monitoring wells will be installed at the edge of the tank farm and inserted below the base of the tanks as specified by the engineer;
- The forecourt will have a storm water drainage system that will discharge into an onsite purpose build water drain system via an oil/water separation pit;
- A suitable sewerage system with adequate capacity which offers efficient wastewater treatment and resource reuse to minimise environmental impact should be constructed to serve the facility, and
- Use of local building materials that are readily available in the surroundings should be made.

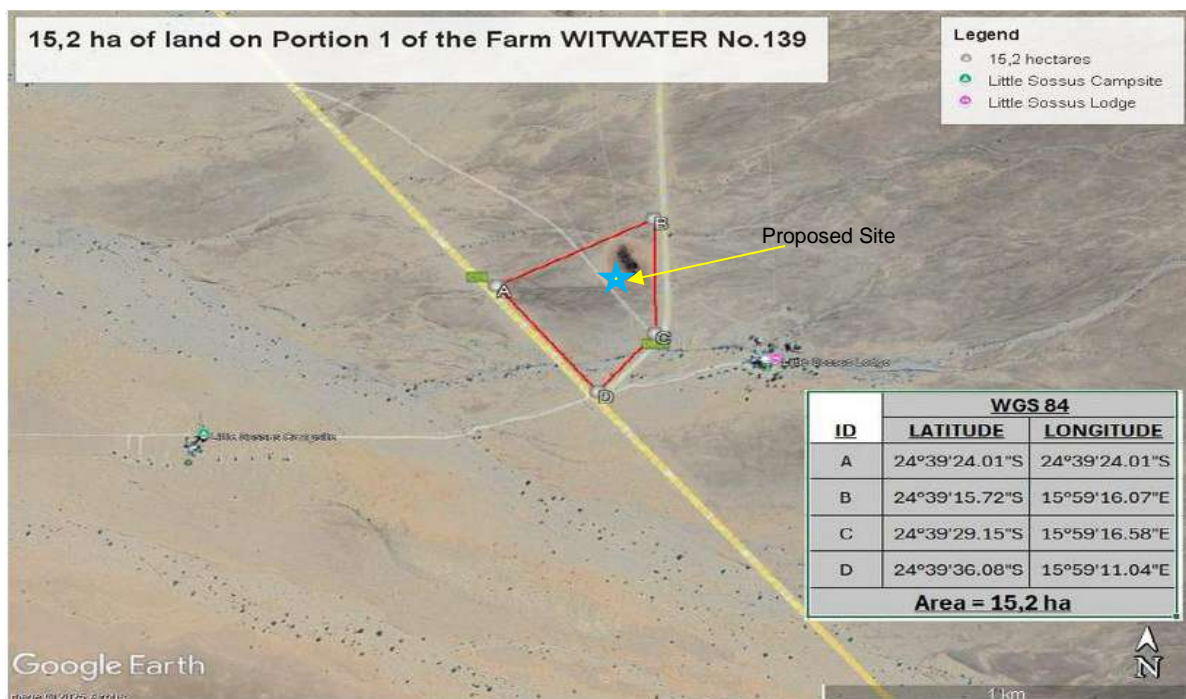


Figure 5: Google Earth Image Depicting Portion 1 of Farm Witwater

2.4 Project Alternatives

Consideration for alternatives for a proposed project is an important component of the EIA process. These alternatives were considered and brief comments are provided here:

- Site Alternatives;
- Site Access Alternatives;
- Lay-out Alternatives;
- Technology Alternatives for the type of development/activity to be undertaken, and
- The No-Go Option Alternative.

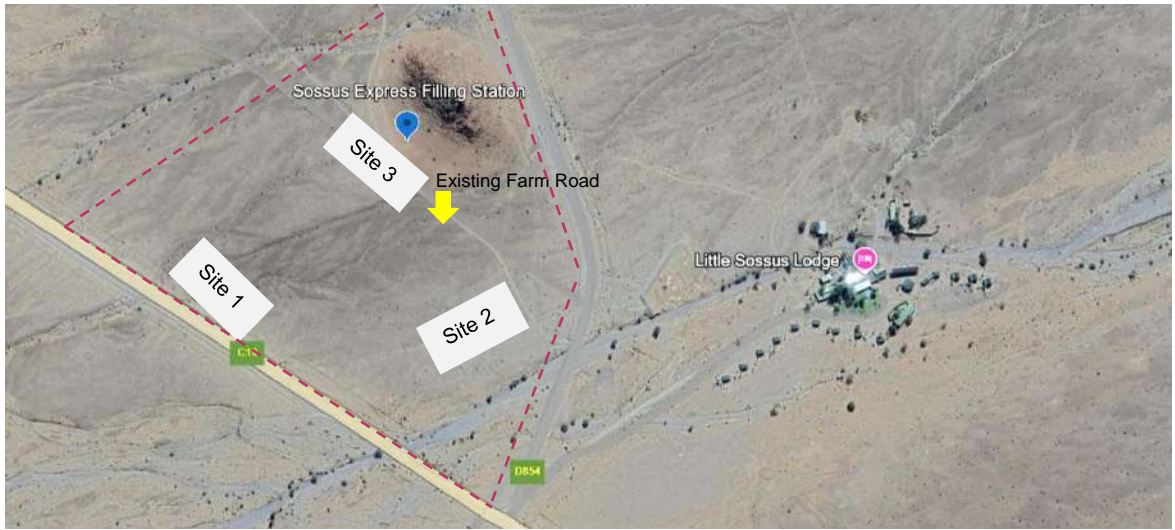


Figure 6: Google Earth Image showing Portion 1



Figure 7: Selected Project Site

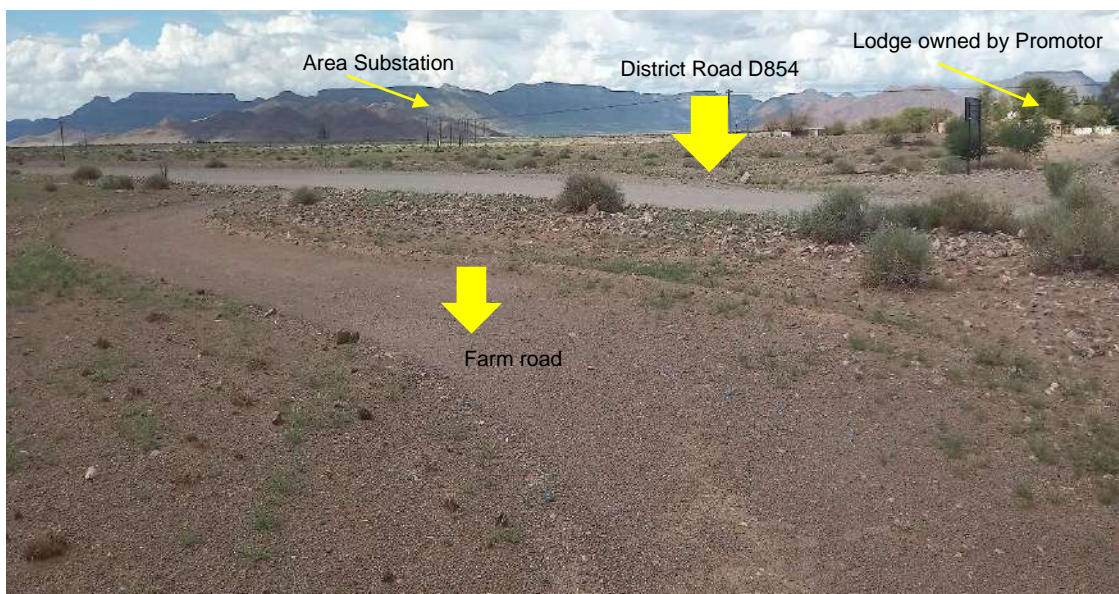


Figure 8: Existing Farm Road from D854

Alternatives considered have included consideration of all possible means by which the purpose and need for the development could be accomplished in the specific instance taking account of the interest of the promotor in the development.

2.4.1 SITE ALTERNATIVES

There was no consideration given to site alternatives for the reason that a SVA was already undertaken which led to the LOI granted by MIME for the site which has been assessed. The site feasibility has included existing service stations in the district, the traffic volumes in the surroundings area and the potential market share that the envisaged FRO will capture. What was considered was the position where to site the specific development within the confines of Portion 1 available for the project.

2.4.2 POSITION ALTERNATIVES

Three alternative positions were identified within the confines of Portion 1, which measures 151 500 m² (15.1 ha). The three sites are as depicted on Google earth image presented in Figure 6, and named Site 1, Site 2 and Site 3.

SITE 1

At this site, the facility will be alongside the C19 route and will require the construction of a short access route linking it to C19. The distance between this new access route and the existing intersection (D854 and C19) is ±250 m. Generally, road intersections are considered hazardous areas due to increased potential for collisions as opposed to a straight road stretch. It is therefore unlikely that the Roads Authority will approve an access road in close proximity to each other.

Another drawback with this position is that the FRO would have a direct line of sight to two lodges with potential visual impacts emanating from lights used at the FRO. However, this effect is less impactful because both lodges are outside a radius of 2.5 km from the project site.

SITE 2

This site was discarded on the basis of its close proximity to an ephemeral stream (Dry River) which runs on its southwest periphery. From this site, Little Sossus Lodge at 450 m will have a direct line of sight to the FRO, however, all the guestrooms and recreational amenities at the lodge are south facing and will not be impacted. The stream can be seen on Google earth images presented in Figures: 5 & 6.

Site 3

This site was found to present the least and lowest environmental impacts when compared to Site 1 and Site 2. Access to Site 3 could be provided via an existing farm route seen in Figures 9 & 10. The farm road starts from D854 (Figures: 5 & 8).

Making use of the said farm road will require minimal work - widening, grading and levelling to accommodate all types of vehicles that will visit the filling station. Siting the facility at this location on the foot of the hill (Fig.8) will reduce potential visual intrusion which the FRO could have on the surrounding lodges. At this location views to the north, south, east and west are presented in Figures: 9, 10, 11 & 12.

2.4.3 TECHNOLOGY ALTERNATIVES

The development is related to the construction of a FRO, the most appropriate construction methods will be based on what is available in terms of equipment as well as building materials. During the construction and operational phases, water will be sourced from an existing borehole sunk on the property. Machinery and equipment for the operational phase will depend on what is available on the market at such time that the promotor can commence with the operational phase. Where possible and practical, standard practices regarding, energy efficiency during the operational phase will be utilised, i.e. solar power system, use of hybrid systems, energy saving bulbs, dual flush toilets, etc.

2.4.4 THE NO-GO ALTERNATIVE

This alternative assumes that the status quo remains unchanged in that no FRO is constructed on the premises. There will be no clearing of vegetation and the land will continue to remain in its current state. However, this alternative is not encouraged because the absence of a FRO at the specific site would mean that the need as identified by the promotor and confirmed by MIME through its own site viability assessment would remain unfulfilled.

It is important to mention that the FRO is one component of a larger development with a footprint estimated to cover 2 752 m² (Table 4). According to a report by a local company of quantity surveyors (Jordaan, Oosthuysen & Nangolo) the development cost for retail facilities outside Windhoek, Walvis Bay and Swakopmund was estimated at N\$15 000 per square meter. Using this estimates, the CapEx for the whole development is upwards of N\$40 million which is a significant investment in a rural district.

The goals as outlined in NDP 5 will not be fulfilled in that no employment will be created and the youths in the surrounding villages will remain unemployed and disgruntled. The 'No-Go alternative' option is therefore not supported.

2.5 Duration for Construction

It is estimated that the construction phase would last for about 18 months – this long period is assumed to include tender document preparation and tender appraisals. Procurement of items with long lead-times such as tanks and pumps is also expected to extend the construction period.

Given the CapEx that will be invested, the facility is expected to have an operational lifespan in excess of at least twenty five years.



Figure 9: View to the South from the Project Site



Figure 10: View to the North from the Project Site



Figure 11: Looking East from C19 - Site will be behind the Hill



Figure 12: View to the West from the Project Site

2.6 Support Facilities and Services

2.6.1 WATER REQUIREMENTS

Underground water is the primary source of water used on the farms and by hospitality establishments in the area. Extraction is through boreholes. Water required for the construction and operation of the FRO will be sourced from a borehole on the property (Portion 1). The yield from the borehole is considered adequate to meet the construction and operational phases.

The development will be expected to implement water saving measures for its various activities including recycling and reusing at the car wash facility. Water saving technologies like sensor taps and or installation of low-flow fixtures like aerators should also be considered.

Potential Environmental Impacts

Existing borehole is fully equipped and has adequate capacity to supply water to the facility. Impacts are limited to excavations for the pipelines to bring the water to the development. The distance involved is however short and all materials excavated can be used to backfill the trench.

2.6.2 ELECTRICITY REQUIREMENTS

The facility will require an uninterrupted power supply system to feed all components at the development including the FRO. In the short term electricity will be sourced from a mini substation situated about 500 m from the project site (Fig. 8). In the long term, an investment in a PV system of 0.5 MW can meet the power requirements of the whole development free it from grid power and reducing its carbon footprint. Most developments in the Hardap and Karas regions have gone this way benefiting from the abundant sunshine.

To save power, a mixture of LED and other lighting systems should be used for economy of consumption. Adequate lighting should be provided for areas that will be accessed and operated during night operations, as well as for security purposes. The lighting should be designed in manner that ensures that sufficient light is available for the CCTV system to operate. Alternative forms of energy supply such as solar and wind should be explored during the design stage in order to reduce the carbon footprint of the facility.

Potential Environmental Impacts

Approximately four powerline poles will be required. Erection of such poles will have minimal impacts emanating from vegetation clearing, dust during digging and visual intrusion. In case of a PV system, efforts should be made to conceal the system so that it does not become a visual nuisance to the public using adjacent roads.

2.6.3 ACCESS ROAD

The facility can be accessed from district road D854 which is an existing farm road. To provide direct access from C19 will require the construction of a new access road with a length of approximately 300 m. It is unlikely that this option will enjoy positive consideration by Roads Authority because it will result in having two intersections on C19 in close proximity to each other. That both D854 and C19 are gravel roads will also exacerbate the propositions (Fig. 13). Early integration of safety considerations during the design process is thus crucial for a safer and more accessible road to the facility.



Figure 13: Hazardous Conditions at the Intersection of D854 and C19



Figure 14: Dust on C19 seen from the project site

It is proposed that a split-rail fencing (log fencing) be erected along the entire lengths of C19 and D854 so as to restrict motorists to make use of the single access road provided to serve the facility (Fig. 6).

Potential Environmental Impacts

Making use of the existing farm road will have minimal environmental impacts resulting from activities related to widening the road to allow for a two-way traffic, some levelling and compacting as well as the installation of the necessary traffic signs at the intersection of D854.

2.6.4 SOLID WASTE HANDLING AND MANAGEMENT

At present solid waste from the lodges and campsites operated by the promotor is temporarily stored in waste bins, then sorted and placed in suitable strong refuse bags and transported to Windhoek making use of trucks delivering goods to the hospitality establishments on a weekly basis. This arrangement will continue with the solid waste generated by the proposed filling station.

Potential Environmental Impacts

During the construction and operation the development will add another waste stream, viz. hazardous waste which can be take the form of spill or leaks and must be handled as recommended in the EMP.

2.6.5 SEWAGE SYSTEM

The project will include the construction of an onsite eco-friendly sewage system to handle the sewage effluent from the development. A sewage system often utilises a septic tank and associated drain fields for the wastewater treatment and disposal. The system will be designed to treat all wastewater from all areas of the development. Some components of the system would include a septic tank where solids settle and are partially digested, and the drain field, where the remaining liquid effluent is slowly released into the soil for further treatment by natural processes.

Potential Environmental Impacts

Any new sewage system must be sited at least 100 m from any river stream on the project site. The system must be designed by a professional engineer and installed by an experienced company to ensure that it does not leak during its operational lifespan. All wastewater from all areas of the development must be directed to pass through an oil separator.

2.7 Ancillary Infrastructure Required for the Construction

No major infrastructure is required on site for the construction of the development. The required infrastructure to support the construction is briefly discussed below:

2.7.1 CONTRACTOR'S CAMP AND LAYDOWN AREAS

A designated areas will be established on the project premises to allow the appointed contractor to establish a temporary construction camp where to keep its plants, machines, equipment and personnel. The area allocated must be big enough to accommodate all construction equipment and personnel. The area should be at least 50 m from any known river streams.

Environmental Considerations:

When selecting an area for the campsite, choose a site that will cause minimal disruptions to existing habitats and ecosystems. Mature trees must not be chopped down.

2.7.2 SANITATION

Proper sanitation at the construction camp is crucial for wellbeing, health and safety of personnel. Adequate facilities must be provided which include clean drinking water, toilets with running water, handwashing stations, showers, and proper waste management system to prevent disease and contamination.

Environmental Considerations:

A high standard of housekeeping must be maintained which focuses on prevention of contamination and pollution of soil, water and air from leaking sanitation facilities. Proper waste management must be maintained throughout the construction period.

2.7.3 SECURITY

To campsite must be secured and preferably fenced in with a single access point. Access to the construction camp must be restricted to construction personnel only. The Foreman must determine if a security guard is required to man the premises during working hours.

Environmental Considerations:

Poor security at the construction campsite could lead to loss of resources through theft, sabotage and or vandalism

3. PROJECT BASELINE ANALYSIS

A brief baseline of the project site is presented in **Table 5**. Only those aspects that have a bearing on the project have been elaborated upon.

Table 5: Project Site Characteristics

Particulars	Details	Environmental Impacts/Considerations
Project Location	Portion 1 of Farm Witwater No. 139 Hardap Region	
Project Site	At the intersection of tourist route C19 and district road D854	
Surrounding Land Use	The project site is on a privately owned commercial farm and surrounded by commercial farm lands. Agriculture is therefore the predominant land use in the district.	The proposed activity is allowed for and no rezoning will be required.
Longitude	24° 39' 36.08" South	
Latitude	15° 59' 11.04" East	
Topography	The project site itself is flat, but the adjacent plains are quite scenic with undulating mountains, hills and valleys as far as the eyes can see.	
Road Infrastructure	The project site is at the intersection of tourist route C19 and the district road D854. Both roads are gravel roads under the jurisdiction of the Roads Authority. There are plans to upgrade C19 or C14 to bitumen standard in the near future.	A short access gravel road (about 400 m) has to be constructed to connect the development – an existing farm road running from D854 would offer the least environmental disturbances.
Nearest towns/settlements	Maltahohe (130 km) Sesriem Settlement – 40 km Walvis Bay – 325 km	All nearest towns are accessed by gravel roads.
Nearest Hospitality Facility	There are in excess of 80 hospitality facilities (lodges, campsites, etc) within a radius of 100 km of the project site NWR's Sesriem Lodge : ±40 km	
Nearest airports/Landing strips	Walvis Bay International Airport : ±320 km Sesriem Landing strip : ±45 km Maltahohe Airstrip : ±130 km Keetmanshoop : ±425 km	
Surface waterbodies	None. The Atlantic Ocean is about 120 km away (as the crow flies) There are several ephemeral river streams around the project site.	Construction and operational activities at the facility have the potential to cause pollutants to surface and groundwater bodies.
Communication	Mobile network is available	
Climatic Conditions	Taking the Sesriem Settlement as a reference point: (source : Customweather & promotor) Rainfall: Annual average precipitation at Sesriem is 113 mm per year. At the project site average rainfall received for 2025 was about 180 mm.	Occasionally, rainfall events may occur which has the potential to wash away pollutants present at the facility, especially on the jetty, into the sea.
	Temperatures January to February – these months are regarded as midsummer months with hot and humid conditions often accompanied by torrential rain. Summer (November to April) – this period is considered as the hottest period with average temperature upwards of 35 °C. November and December – the first rain often falls in November providing the much needed relief after a long dry winter spell. These are the hottest months with temperature hitting the upper 30-ties. March to April – Rainfall decreases and stops entirely in April. Average daytime temperatures are around 25 °C and 30 °C with the nights starting to get cold again. Wind Conditions: October is the windiest month with an average wind speed of 18 km/h.	Wind direction should be taken into account when stockpiling construction materials that are prone to wind erosion such as building sand. Handling of hazardous products (fuel offloading and discharging) should be suspended during events of berg-wind conditions. Periods of strong westerly to south-westerly wind, as well as north winds may carry airborne dust to nearby sensitive receptors
Flora Diversity	No trees occur on the project site. Large trees in the area are mostly located along watercourses. The	No exotic vegetation or plants with protected status are found on the project site.

	bulk of the perennial plant life encountered on the project site consist of shrubs and grasses Figures:	
Faunal Diversity	<p>Various faunal species endemic to the Nama Karoo ecoregion are generally encountered in the project area. Some of these are springbok, grant's rock mouse, the bushy-tailed hairy-footed gerbil, Visagie's golden mole, the river rabbits, etc. (Hilton Taylor, 2000)</p> <p>Birds endemic to the ecoregion include ferruginous lark, red lark, Sclater's lark, tractrac chat, Namaqua prinia, Karoo Scrub robin, red headed cisticola, the Karoo chat, etc. (Dean et al., 1991).</p>	The project will have minimal impacts on faunal diversity.
Soils	The soil around the project site consists of rocky and gravelly soils mixed with round pebbles. Such soils have limited agricultural potential owing to their poor ability to retain water.	The soil has poor drainage capabilities and any hydrocarbon spill or leak will rapidly infiltrate into the soil with the potential to contaminate groundwater. This is depended on the volume of the spill as minimal spill or leaks will be soaked up by the soil without reaching the groundwater/aquifer.
Geology	The immediate project site surround has a fascinating geology comprising of older and relatively young rock formations. Massive intrusions in the form of dykes cutting vertically across metamorphic rock layers and sills cutting across volcanic rocks are evident in the valley leading to the project site presenting a beautiful scenery.	Knowledge of the local geology is critical and should be considered during the design phase to ensure that the correct concrete strength is used.
Groundwater	The farming community in the district of Maltahohe meets its water requirements from groundwater sources. The aquifers are found within fractured rocks and alluvial deposits with depths and yield volumes of boreholes varying from one borehole to another. The quality of groundwater is generally good, and in most cases, water extracted is often fit for consumption, both by livestock and human.	Pollution of groundwater is prohibited. Correct storing and handling of hazardous products is therefore required. Regular maintenance of facilities must be carried out to ensure that no leaks or spills occur from such facilities.
Archaeological, Cultural and Heritage Aspects	<p>Sites of cultural and heritage nature are protected under the National Heritage Act (No. 27 of 2004).</p> <p>There are no known sites of cultural and heritage interests on the Farm Witwater or its surrounds.</p>	Measures recommended in the EMP should be followed during the construction phase.
Demographic Environment	<p>The Daweb Electoral Constituency in which project is located has a population of 6 092 comprising of 52.5% female and 47.5% male. (NSA, 2023 Census). The bulk of the population (62%) was in the age group 15 to 64 years.</p> <p>Economic activities in the constituency is predominantly in the farming and tourism economic sectors.</p>	<p>The envisaged facility will provide employment opportunities to skilled, semi-skilled and non-skilled people during the construction and operational phases of the development.</p> <p>Prospective employees for non-skilled work will be hired from within the constituency.</p>

4. THE REGULATIVE FRAMEWORK

For development to take place on a sustainable basis, government has formulated laws, rules and policies that require the implementation of all those projects considered to have an adverse impact on the environment, to be preceded by an environmental scoping assessment. Some of the laws that are applicable to the activity envisaged by the promoter are as listed in Table below.

Table 6: Legislative Framework

Legislation	Main Aspects
The Constitution of Namibia	<ul style="list-style-type: none"> • Supreme law of the land. • Encourages the welfare of the people. • Provides for environmental protection. • Recognises international agreements and corporations.
Environmental Management Act (Act. No. 7 of 2007)	<ul style="list-style-type: none"> • Provides for the definition of the environment. • Promotes and encourages sustainable management of the environment when natural resources are exploited/extracted for the benefit of the residents/citizens. • Provides for a process of assessment and control of activities that are likely to pose significant effects on the receiving environment.
Environmental Management Regulations (Gazetted on 12 February 2012)	<ul style="list-style-type: none"> • Heralded the implementation of the EMA almost five years after the Act was approved by the legislature; • Presents a list of activities that require an ECC prior to commencement, and • Regulates and provides guidelines on how EIAs must be conducted.
Petroleum Products Regulations and Petroleum Products and Energy Act (Govt Gazette Notice 2000)	<p>The Act regulates the licensing and certification of fuel outlets including related facilities such as FROs, LGP bottling plants, etc.</p> <p>Section 3 (1) states that</p> <p>(1) No person shall</p> <ul style="list-style-type: none"> • operate a retail outlet or conduct the business of a wholesaler, unless authorised to do so under a retail licence or wholesale licence; • operate a consumer installation, unless authorised to do so under a certificate, and • shall possess or store any fuel. <p>(2) No person shall possess or store any fuel except under authority of a licence or a certificate, excluding.</p> <p>Minister of Mines and Energy has under regulation 44 of the Petroleum Products Regulations approved the use in Namibia of these specifications, standards and code of practice:</p> <ul style="list-style-type: none"> • the American Standards Institute (ASI); • the British Standards Institute (BSI); • the South African Bureau of Standards (SABS, and • the South African National Standards (SANS) and • <i>SABS 0131-1 : 1977</i> – The storage and handling of liquid fuel Part 1 – Small consumer installations. • <i>SABS 0131-2 : 1979</i> – Storage and handling of liquid fuel Part 2 – Large consumer installations; • <i>SABS 0131-3 : 1982</i> – The storage and handling of liquid fuel Part 3 – Bulk low-flash point fuel storage and allied facilities at large consumer installations, and • <i>SABS 0108</i> – Classification of hazardous locations and selection of apparatus for use in such locations.
Labour Act (Act 11 of 2007 as amended)	<ul style="list-style-type: none"> • The Act contains extensive and detailed provisions relating to the basic employment conditions, rules regarding termination of employment, dismissals and disciplinary action; • It also provides for the prevention of trade disputes, unfair labour practices, regulates and controls collective job action, employment agencies and all matters incidental thereto, and • The Act also provides the right to the employees to speak about work conditions, the right to say no to unsafe work, the right to be consulted about safety in the workplace and the right to workers compensation.
Public and Environmental Health Act (Act No. 1 of 2015)	<ul style="list-style-type: none"> • The Act provides for a legal framework for a structured more uniform public and environmental health system and for matters incidental thereto; • It deals and provides guidelines on noise generation and control thereof within an urban environment; • Also deals with waste management, handling or collection, waste disposal, waste recycling, sanitation, etc.;

<p>Public Health Covid-19 General Regulations (as amended throughout 2020 to 2022)</p>	<ul style="list-style-type: none"> • Provides for a framework on how to deal with the challenges occasioned by the outbreak of the Covid-19 pandemics and includes issues related to restrictions on gathering, testing, contact tracing, quarantine facilities, public transport, sanitation at the work place, and • It also provides for burial protocols to be followed for those who succumbed to the pandemic.
<p>Social Security Act Act 34 of 1994 Employees' Compensation Act (as amended)</p>	<ul style="list-style-type: none"> • Compels employers and employees to make equal contributions to the Social Security Fund. Contribution is based on 0.9% of an employee's basic earnings with a minimum of N\$2.70 and a maximum of N\$81.00 • Requires employers to contribute to an insurance fund which covers injuries and accidents on duties.
<p>Hazardous Substances Ordinance (No. 14 of 1974)</p>	<ul style="list-style-type: none"> • Provides for the control of hazardous substances with potential to cause harm, injuries and even death. • Also provides for the manufacture, handling, storage, sale, use, disposal, etc. of hazardous substances.
<p>Atmospheric Pollution Prevention Ordinance (No. 11 of 1976)</p>	<ul style="list-style-type: none"> • Provides control of noxious or offensive gases and matters incidental thereto. • Requires best practical means for preventing or reducing the escape into the atmosphere of noxious or offensive gases produced by the scheduled process.
<p>Water Resource Management Act (2004)</p>	<p>The following permits are required in terms of the Water Act:</p> <ul style="list-style-type: none"> • Water abstraction permits; • Domestic effluent discharge permits (site offices, construction camp); industrial effluent discharge permits; • Water use for dust suppression; and water reticulation permits (pipelines), and • Will be superseded by Water Resources Management Act 2013 once the regulations are implemented in the future.
<p>National Heritage Act No. 27 of 2004</p>	<p>No archaeological/heritage site or cultural remains may be removed, damaged, altered or excavated.</p> <ul style="list-style-type: none"> • Section 48 sets out the procedure for application and granting of permits, such as the permit required in the event of damage to a protected site occurring as an inevitable result of development. Section 51 (3) sets out the requirements for impact assessment. • Part VI Section 55 Paragraphs 3 and 4 require that any person who discovers an archaeological site should notify the National Heritage Council
<p>Namibia Standard Act (Act No. 18 of 2005)</p>	<p>Responsible for the promotion of standardization and quality assurance in the industry, commerce and the public sector in Namibia, with the aim of improving product quality, industrial efficiency and productivity and promoting trade so as to achieve optimum benefit for the people of Namibia.</p>
<p>National Development Plans (NDP5)</p>	<p>NDP5 has its goal to reduce poverty such that by 2022, marginalized communities are integrated into the mainstream economy.</p>

5. IMPACT ASSESSMENT METHODOLOGY

5.1 Introduction

The methodology used to determine the significance rating of potential environmental impacts which the proposed project may bring to bear on the biophysical and socio-economic environments, is presented in this section. Environment assessment is, in essence an imprecise science, because the assessment of predicted significance of an impact for any particular project, is by its very nature inherently uncertain. To tackle the uncertainty, an empirical standardized assessment methodology has been developed.

The impact assessment methodology used for this project is outlined in **Table 7**.

Table 7: Criteria for Impact Assessment

Criteria	Rating	Expansion
Criteria for ranking the NATURE of the Impact	POSITIVE	The activity will have effects that are socially, economically and environmentally beneficial.
	NEUTRAL	The activity has zero effect – no impact
	NEGATIVE	The activity will have effects that are socially, economically and environmentally harmful.
Criteria for ranking the INTENSITY (SEVERITY) of the environmental Impact	Zero to Very Low	Negligible change, disturbance or nuisance. The impact affects the environment in such a way that natural functions and processes are not affected. People/communities are able to adapt with relative ease and maintain pre-impact livelihoods
	LOW	Minor or slight change, disturbance or nuisance. The impact on the environment is not detectable or there is no perceptible change to people's lives.
	MEDIUM	Moderate change, disturbance or discomfort. Where the affected environment is altered, but natural functions and processes continue, albeit in a modified way. People/communities are able to adapt with some difficulty and maintain pre-impact livelihoods, but only with a degree of support.
	HIGH	Prominent change, disturbance or degradation. Where natural functions or processes are altered to the extent that they will temporarily or permanently cease. Affected people/communities will not be able to adapt to changes or continue to maintain pre-impact livelihoods.
Criteria for ranking the DURATION of impacts	SHORT TERM	Under 5 years
	MEDIUM TERM	Impact ceases between 5 and 15 years if activity is stopped.
	LONG TERM	Beyond 15 years (Impact ceases after the operational life of the activity, either by natural processes or by human intervention).
	PERMANENT	Where mitigation is either by natural process or by human intervention and will occur in such a way or in such a time span that the impact can be considered transient.
Criteria for ranking the EXTENT /SPATIAL SCALE of the Impact	LOCAL	Impact is confined to project or study area or part thereof, e.g. limited to the area of interest and its surrounds.
	REGIONAL	Impacts is confined to a region, in this case, Hardap region
	NATIONAL	Impact is confined to a country as a whole
	INTERNATIONAL	Impact extends beyond the national scale
Criteria for determining the PROBABILITY of Impacts	IMPROBABLE	Where a possibility for the impact to occur is very low either because of design or historic experience, i.e. less 30% chance of occurring.
	POSSIBLE	Where there is a distinct possibility that the impact would occur, i.e. between 30% and 60% chance of occurring.
	PROBABLE	Where it is most likely that the impact would occur, i.e. between 60% and 80% chance of occurring.
	DEFINITE	Where the impact would occur regardless of any prevention measures, i.e. more than 80% chance of occurring.
Criteria for determining the DEGREE OF CONFIDENCE of the assessment	LOW	Below 35% sure of impact prediction
	MEDIUM	Between 35% and 70% sure of impact prediction
	HIGH	Over 70% sure of impact prediction
Criteria for the DEGREE TO WHICH IMPACT CAN BE IMPACTED – the degree to which impact ac impact can be reduced/enhanced	NONE	No change of impact after mitigation
	VERY LOW	Where the significance rating stays the same, but where mitigation will reduce the intensity of the impact.
	LOW	Where the significance rating drops by one level, after mitigation
	MEDIUM	Where the significance rating drops by two to three levels, after mitigation.
	HIGH	Where the significance rating drops by more than three levels, after mitigation.
Criteria for LOSS OF RESOURCES – the degree to which a	LOW	Where the activity results in a loss of a particular resource but where the natural, cultural and social functions and processes are unaffected.

Criteria	Rating	Expansion
resource is permanently affected by the activity, i.e. the degree to which the activity a resource is irreplaceable	MEDIUM	Where the loss of a resource occurs, but natural, cultural and social functions and processes continue, albeit in a modified manner
	HIGH	Where the activity results in an irreplaceable loss of a resource
Criteria for REVERSIBILITY the degree to which an impact can be reversed.	IRREVERSIBLE	Where Impact is permanent
	PARTIALLY REVERSIBLE	Where Impact can be partially reversed
	FULLY REVERSIBLE	Where Impact is fully reversed
<p>Determining the SIGNIFICANCE RATING</p> <p>Consequence is a product of Extent, Duration and Intensity. The ratings and description for determining consequence are provided below</p>	HIGH	Impacts are of high magnitude and will be experienced regionally for at least the lifespan of the development or will be irreversible. The impacts could be have the no-go proposition on parts of the development in spite of mitigation measures that may be implemented.
	Medium	Natural, cultural and/or social functions and processes are altered by the activities, and management measures must be provided to reduce the significance rating.
	Low-Medium	Impacts will be experienced in the local and surrounding areas for the lifespan of the development and may result in long term changes. Management measures may be proposed to ensure that the impact remain of a low significance rating.
	Low	Neither environmental nor social and cultural receptors will be adversely affected by the impact. Management measures are usually not provided for low impacts.
	Very Low	There is no impact at all - not even a very low impact on a party or system. : Impacts will be site specific and temporary with no mitigation required

5.2 Significance Rating

Normally, the magnitude of an impact is based on specialized knowledge related to the relevant standard (threshold value specified and source referenced). For each impact, the **Extent** (spatial scale), **Magnitude** (size or degree scale) and **Duration** (time scale) are explained. These criteria are used to ascertain the **SIGNIFICANCE RATING** of an impact, initially without mitigation (WOM) and secondly when recommended mitigation measure have been applied, i.e. with mitigation (WM). The Significance of an impact is derived from temporal and spatial scale and magnitude. Such significance is informed by the context of impact.

5.3 Mitigation Measures

A mitigation hierarchy of action has been developed to respond to any proposed activity and covers aspects such as impact avoidance, impact minimization, restoration and compensation as presented in Figure 15. It is imperative to enhance the environment by ensuring that positive gains are included in the proposed development or activity. Where negative impacts occur, the hierarchy indicates the steps which have to be followed. Such steps are most effective when applied at the conceptual stages of the project.

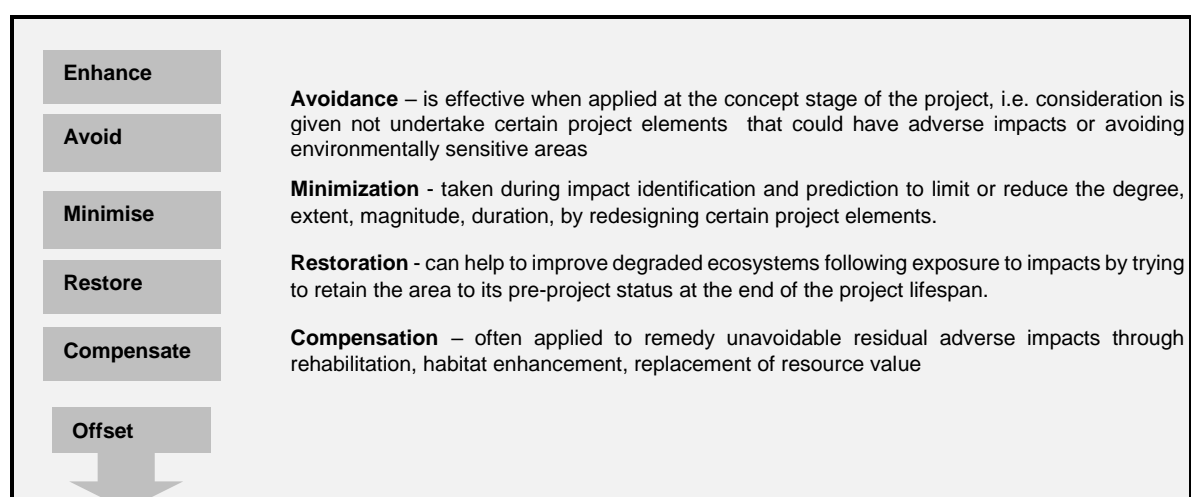


Figure 15: Mitigation Hierarchy

Once significance rating has been determined for each impact, management and mitigation measures must be determined for all impacts that have a significance ranking of medium and higher in order to attempt to reduce the level of significance that the impact may reflect. Based on the proposed mitigation measures, a mitigation efficiency, whereby the initial significance is re-evaluated and ranked again to effect a significance that incorporates the mitigation based on its effectiveness. The overall significance in then re-ranked, to determine a final significance rating.

6. ASSESSMENT OF ENVIRONMENTAL IMPACTS

In this section potential impacts that may arise from the proposed FRO are assessed using the methodology described in the preceding chapter.

6.1 Planning and Design Phase Impact Assessments

Table 8: Assessment of Impacts Related to the Planning and Design Phase

Environmental Aspect	Environmental Objectives	Management Action/Mitigation
Compliance Requirements	Ensure that all the necessary permits and licenses are obtained in a timely manner.	<p>Ensure that all activities pertaining to the development of the FRO are compliant with applicable laws and regulations and that all the necessary licenses and permits are secured and in place before construction work commences. Copies to be kept on file at the construction site office. e.g.</p> <ul style="list-style-type: none"> • a valid ECC from MEFT; • a Letter of Intent or Fuel Retail Licence from MIME; • Working Drawings for the Fuel Station and Related Amenities; • Employment contractors signed by both parties and copies kept on file
Design Consideration	Working Drawings (to be compliant with local authority standards and specifications – where applicable).	<ul style="list-style-type: none"> • The design for the FRO and support infrastructure must be prepared by professional engineers who are well experienced and registered with the Engineering Council of Namibia or equivalent foreign recognised body. • The FRO, underground storage tanks, conveying pipelines and pumping system must meet local or international standards and specifications. • The design and layout which result in the least environmental disturbances must be selected and implemented. • All building infrastructure must meet local/regional authority requirements and approved or endorsed as such.
Decarbonisation Initiative	Strive to limit the carbon footprint of the facility.	<ul style="list-style-type: none"> • During the planning stage, efforts should be made that embrace decarbonisation practices aimed at reducing the carbon footprint of the project during its construction and operational phases. • The position and orientation of roof structures covering should allow for installation of solar panels. • Green technology should be adopted when selecting equipment for the facility with emphasis placed on the use of hybrid systems or those systems that can be powered by wind or solar energy. • Where possible, procure and install water recycling facilities including solar geysers instead of conventional geysers. • Design the facility in a manner that provides adequate day natural lighting and uses energy saving bulbs.
Visual and Sense of Place	Minimise visual impacts	<ul style="list-style-type: none"> • Orientate the layout of the FRO around the hill to the east of C19 to conceal the facility out of sight of neighbouring lodges. • The layout of the lighting at the FRO, its extent and intensity may not become a nuisance to the public using the C19 at night. • Excavation and trenching activities should be carried out in a manner that ensures minimal dust being blown up into the atmosphere. • Take predominant wind direction into account when siting stockpiles of building materials. Mixing of cement must be avoided during windy conditions. • External walls and roof structures for the facility should be painted with colours that blend in well with the natural environment.
Archaeological and Cultural Resources	Protect items of cultural and heritage nature	<ul style="list-style-type: none"> • The chances of finding items of cultural or heritage nature during the construction phase are good. • The EMP should be consulted in the event such items are uncovered.
<p>Activities associated with the planning and design phase are done mostly at desktop level. In some cases site visits maybe undertaken, but the impacts from such visits are negligible, if any. There is thus no impact with respect to this phase of the project.</p>		

6.2 Construction Phase Impact Assessments

The construction entails the development of a modern FRO and related amenities. The main construction activities will include:

- Site clearing
- Surveying
- Setting out various components of the facility
- Excavation and trenching (civil works)
- Installation of 2 x underground storage tanks (USTs) each with a storage capacity of 46 m³

- Installation of pipelines from USTs to the Pump Island
- Installation of Pumps
- Paving 1500 square meters

Table 9: Construction Phase Impact Assessments

Summary of Impact	Impact Assessment	Proposed Mitigation Measures
1. Impacts on the Ecosystem and Biodiversity		
<p>The proposed construction site is essentially virgin land with minimal human disturbances to its biodiversity. The envisaged development will transform the site and lead to the complete loss of biodiversity - habitat and vegetation. The nature of impact is expected to be minimal and confined to the project footprint of about 1.5 ha of the 15 ha.</p> <p>The cumulative impact will be site specific, definitive, of low intensity and of low impact</p>	<p>Nature - Negative</p> <p>Extent - Site Specific</p> <p>Duration – Short term</p> <p>Intensity - Very Low</p> <p>Probability – Improbable</p> <p>Significance Rating</p> <p>Low - WOM</p> <p>Very Low - WM</p>	<ul style="list-style-type: none"> • Care should be taken to confine all excavations and trenching to areas that are clearly demarcated; • Have construction employees inducted on the EMP and maintain a high standard of housekeeping throughout the construction period; • Encourage effective waste (solid and hazardous) handling and disposal in a responsible manner; • Keep onsite ablution facilities tidy and clean at all times; • Use lights during the construction phase for security purposes and ensure that lights is directed downwards to working surfaces and not outwards; • Waste such as food items with the potential to attract scavengers to the construction site must be kept in bins with lockable lids.
2. Soil Compaction and Erosion		
<p>The construction activities will include excavation and trenching which involve some disturbances to the soil profile. The rocky topographic nature of the site implies that substantially digging will be required hence increased soil exposure and disturbances.</p> <p>The underground tanks will require pits that are excavated and the remaining materials not used in backfilling of the pits could be used for levelling and landscaping of the FRO.</p> <p>There is a possibility that soil may be compacted which results in reduced ability of vegetation growth and water absorption. Exposed soil is also susceptible to erosion by wind and water during high wind and rainfall conditions.</p>	<p>Nature - Negative</p> <p>Extent - Site Specific</p> <p>Duration – Temporary</p> <p>Intensity – Very Low</p> <p>Probability – Probable</p> <p>Significance Rating</p> <p>Low Medium - WOM</p> <p>Low - WM</p>	<ul style="list-style-type: none"> • Excavation activities must be limited to areas that are clearly demarcated and visible to the workers executing the activities. • Newly cleared and exposed areas must be promptly rehabilitated in order to avoid soil erosion; • Where necessary, temporarily stabilization measures must be used; • Appropriate erosion control measures must be implemented and monitoring programme established to ensure that no erosion is taking place. At the first sign of erosion the necessary remedial action must be taken; • Care must be taken to ensure that runoff is well dispersed so as to limit erosion; • An Emergence Response Plan (ERP) to deal with any spills or a major leak which occurs must be developed, and • Comply with the EMP.
3. Surface and Groundwater Contamination		
<p>Erosion of soil, sand or poor storage and handling building materials may contaminate and or block existing surface water courses.</p> <p>Pollutants such as fuel, oil construction waste and general waste generated during construction activities may enter surface water sources if not managed correctly.</p> <p>The construction involves digging of pits for fuel storage tanks. Incorrect installation of such USTs could lead to leakage of contents with the potential to contaminate groundwater.</p> <p>Incorrect handling of hazardous chemicals used during the construction activities could result in spills or leaks which could contaminate both surface and groundwater.</p>	<p>Nature - Negative</p> <p>Extent - Medium</p> <p>Duration – Short term</p> <p>Intensity – Low</p> <p>Probability – Probable</p> <p>Significance Rating</p> <p>Low Medium - WOM</p> <p>Low - WM</p>	<ul style="list-style-type: none"> • Hazardous products required for construction activities must be stored in a secured place with an impervious floor, correctly banded with access limited to key personnel. • Spill control measures must be in place and personnel trained on how to respond in the event of a spill occurring. • Correct procedures as recommended by the manufacturer of hazardous products must be followed when using such products. • Ablution facilities must be erected at least 100 m away from any known water courses on the property; • Toilets are to be secured to the ground and must have a closing mechanism. Toilet papers must be provided at these facilities. • The contractor must ensure that spillage does not occur when toilets are cleaned/serviced, and contents must be properly stored and disposed of properly; • Discharge of waste into the environment and/or burial of waste is strictly prohibited; • Maintenance of equipment and construction vehicles is not allowed at the construction site. Faulty equipment must be removed from site and repaired at a designated area or workshop; • A designated wash bay area must be provided where construction vehicles and equipment are cleaned. Drip trays and emergency spill kit must be provided at the repair/maintenance workshop; • No washing of plants outside of designated wash bay is allowed;

Summary of Impact	Impact Assessment	Proposed Mitigation Measures
		<ul style="list-style-type: none"> Leaking equipment to be repaired immediately or removed from the site. <p>Concrete Mixing:</p> <ul style="list-style-type: none"> Cement mixing must take place on an impervious surface (e.g. plastic or cement mixing pit). Unused cement bags are to be stored in an area not exposed to the weather and packed neatly to prevent hardening or leakage of cement. <p>Spill Prevention and Management;</p> <ul style="list-style-type: none"> Vehicles suspected of leaking must be fixed as soon as possible. Drip trays must be checked and replaced for vehicles standing (parked) for prolonged periods. Drip trays must be of a sufficient size and volume to collect any hydrocarbon leakages from a stationary vehicle. Spill kits (absorbent material) must be available on site and in all vehicles that transport hydrocarbons for dispensing to other vehicles on the construction site. Spilled substances must be contained in impermeable containers.
4. Air Pollution		
<p>Dust will be generated, especially where there is exposure of soil stockpiled from excavation work. Other activities that may contribute to the release of dust include offloading and stockpiles of building materials (sand, stones, exposed excavated materials, handling of cement, etc.) and movement of heavy vehicles.</p> <p>Dust generation could be exacerbated during windy conditions and dry periods. In addition to dust, air pollution may result from exhaust fumes emitted by construction vehicles, especially if the vehicles are poorly serviced and maintained.</p>	<p>Nature - Negative</p> <p>Extent - Small</p> <p>Duration – Temporary</p> <p>Intensity – Very Low</p> <p>Probability – Improbable</p> <p>Significance Rating</p> <p>Low - WOM</p> <p>Very Low - WM</p>	<ul style="list-style-type: none"> A speed limit of 20km/h must be maintained on all internal routes on construction premises; Dust suppression measures such as wetting of the project area should be employed during windy periods or east wind storms. Recycled water to be used, instead of potable water, to save water; Where practical large cleared areas may not be left exposed for longer periods than necessary; The area of disturbance must be kept as small as possible at all times; No unnecessary clearing of vegetation, digging or scraping should occur; All construction vehicles and machinery should be well maintained to allow such equipment to operate efficiently. Idling times of vehicles and machinery to be minimised; All vehicles used during the project development should be properly maintained and kept in good working order. All vehicles and other machinery should comply with road worthy requirements and comply with legislation in terms of allowable emissions.
5. Noise Pollution		
<p>Construction activities are associated with an increase in noise levels as a result of construction vehicles, plant generators, concrete mixers and various other equipment being used on site. While these activities will produce noise, it is unlikely to have a significant impact on the surrounding area.</p>	<p>Nature - Negative</p> <p>Extent – Small</p> <p>Duration – Temporary</p> <p>Intensity – Very Low</p> <p>Probability – Probable</p> <p>Significance Rating</p> <p>Low Medium - WOM</p> <p>Low - WM</p>	<ul style="list-style-type: none"> No construction activities must take place between sunset and sunrise. Establish noise attenuation structures around high noise activities, e.g. metal fabrication activities, concrete mixers, etc.; Equipment and/or machinery which will be used must comply with the manufacturer's specifications on acceptable noise levels; When required, noise mufflers should be utilised to reduced noise; Construction vehicles must be well maintained and regularly serviced with defective silencers replaced; Employ noise reduction methods, i.e. no idling of construction vehicles, no unnecessary hooting, no loud music equipment on the premises, etc. and Employees working in areas where noise levels are elevated should be provided with suitable PPE.
6. Solid Waste Generation		
<p>Various waste types are generated during the construction period, i.e. building rubble, excavated soil, excess concrete and general waste such as litter, etc.</p> <p>Poor waste management during construction has the potential to lead to contamination of surface water, groundwater, visual nuisance, etc.</p>	<p>Nature - Negative</p> <p>Extent – Medium</p> <p>Duration – Medium Term</p> <p>Intensity – Low</p> <p>Probability – Probable</p> <p>Significance Rating</p>	<ul style="list-style-type: none"> A waste management plan for the construction phase must be developed and implemented. Building rubble and other construction waste produced must be re-used if possible and, where unfeasible, it must be disposed of at the nearest registered waste disposal facility. Rubble, which cannot be reused, must be removed from site on a regular basis;

Summary of Impact	Impact Assessment	Proposed Mitigation Measures
	Low Medium - WOM Low - WM	<ul style="list-style-type: none"> • If rubble is stored on site, it should be stored on a designated area which is enclosed and impermeable; • Domestic waste must be stored in containers with lockable lids that must be emptied on a weekly basis or frequently before reaching safe holding capacity; • No waste shall be buried or burned anywhere on the construction site; • Waste may not cause any nuisance to employees or guests visiting the construction site, (e.g. odour); • Construction waste stored on site must be collected and put into suitable closed bins on a daily basis; • Provide suitable waste skips on site. These skips should be sufficient in number, skips should be emptied and replaced before overflowing or spillage occurs. Skips should be covered to prevent waste blowing away; • The construction site must remain litter free and regular inspections for litter must be carried out. The activity must not contribute to any surrounding windblown litter; and • Cement bags must be kept in sealed containers.
7. Traffic Impacts		
<p>During the construction period, there will be construction vehicles around the project site delivering building materials, i.e. sand, concrete stones, cement, etc. Traffic flow at the C19 and D854 intersection is expected to increase but congestion is not anticipated.</p>	<p>Nature - Negative Extent – Small Duration – Temporary Intensity – Very Low Probability – Probable Significance Rating Low - WOM Very Low - WM</p>	<ul style="list-style-type: none"> • Large construction vehicles operated on adjacent public roads (C19 and D854) must comply with road regulations; • Any complainants received from any stakeholder with respect to traffic on public road around the construction site, must be recorded, investigated and corrective measures taken; • All construction machinery and vehicles operated on public roads must have their headlights switched on at all times; • Clear signage with respect to access point and exit point to the construction site should be clearly displayed; • All vehicles of the contractor used in construction activities and operated on public roads must be licensed, roadworthy and driven by operators with valid drivers and third party public license permits; • Any damage caused to adjacent public roads by construction vehicles must be reported and repaired at the cost of the contractor; and • All drivers must be given an induction training workshop on the EMP.
8. Health and Safety Risks		
<p>Use will be made of construction equipment and machinery (excavators, graders, tippers, concrete mixers, compactors, welding, etc.) which poses potential risks to the health and safety of people working at the construction site as well as members of the public who may be visiting the construction site.</p> <p>A limited amount of hazardous products (fuel, LPG, thinners, paint, etc.) will be kept and stored for use during the construction. Poor storage and handling of such chemicals has the potential to cause environmental harm.</p>	<p>Nature - Negative Extent - Medium Duration – Medium Term Intensity – Low Probability – Probable Significance Rating Low Medium - WOM Low - WM</p>	<ul style="list-style-type: none"> • Access to the construction site must be controlled and limited to workers who have received an induction training on the EMP; • All chemicals for use at the construction site must be stored and handled in accordance with MSDS instructions; • The predominant wind direction should be taken into account when selecting areas where to store bulky construction materials that are prone to wind dispersal, i.e. building sand, aggregate, cement mixing areas, etc.; • Employees must be provided with suitable PPEs and wearing of such PPEs enforced; • Selected employees should be trained on how to provide First Aid in the event of an accident/incident occurring. First Aid kits must be available and adequately stocked; • A proper emergency response plan must be developed for the construction site and implemented; • Ensure that the necessary materials and equipment to deal with any spills and leaks of hazardous products that may occur during the execution of the project, are available; • Contact details of persons to be notified in case of a major spillage or accidents on site - nearest police, ambulance, hospital, etc. must be available; and • Apply and adhere to all industry specific health and safety procedures and regulations applicable to the fuel sector.
9. Fire Risks		
<p>Activities such as welding and handling LPG and other flammable products on a construction site can make them sources of very high-risk areas for fire outbreaks.</p>	<p>Nature - Negative Extent - Site specific but can spread to impact wider</p>	<ul style="list-style-type: none"> • Compliance to industry standards and effective training of personnel are key requirements to ensuring that all fire safety measures, guidelines and standards are adhered to;

Summary of Impact	Impact Assessment	Proposed Mitigation Measures
<p>Not only can fire cause major damages to materials and structures, it causes undue delays in the execution of project deadline, but it can also pose serious threats to life.</p> <p>Quality control. Any electrical installations must be thoroughly inspected and undergo PAT testing in accordance with relevant regulations. When it comes to general housekeeping, employees must make sure that all power tools and sockets are switched off when not in use, and any faulty equipment must be removed from the site immediately.</p>	<p>areas if not quickly contained</p> <p>Duration – Depends on response</p> <p>Intensity – Depends on size of fire</p> <p>Probability – Probable</p> <p>Significance Rating</p> <p>Low Medium - WOM</p> <p>Low - WM</p>	<ul style="list-style-type: none"> • Ensure that a comprehensive fire risk assessment is carried out at the site to lower the risk of fire outbreak; • It is advisable to take out a short term fire risk protection insurance for the duration of the construction; • All electrical installations must be carried out by qualified persons. Employees must ensure that all power tools and sockets are switched off when not in use, and that any faulty equipment is removed from the site immediately; • A designated area must be dedicated for food preparation (cooking) and eating meals at the construction site; • Fire control mechanisms (firefighting equipment) must be routinely inspected to ensure that they are in good functional status at all times; • All staff on site to be made aware of general fire prevention and control methods, and the name of the responsible person to alert in the event of fire occurring; • Burning of waste on the construction is not permitted; and • Designated smoking areas should be provided, with special bins for discarding of cigarette butts.
10. Site Security Risks		
<p>During the construction phase, building materials, construction vehicles and equipment at the project site are exposed to the general public which presents opportunities for theft and or vandalism unless proper security is maintained.</p>	<p>Nature - Negative</p> <p>Extent - Site specific if EMP is implemented</p> <p>Duration – Temporary (during construction period only)</p> <p>Intensity – Low</p> <p>Probability – Probable</p> <p>Significance Rating</p> <p>Low Medium - WOM</p> <p>Low - WM</p>	<ul style="list-style-type: none"> • Access to the construction site must be strictly controlled and no unauthorised persons are allowed onto the site; • Unsocial activities such as excessive consumption of alcohol, or illegal selling of alcohol, drug utilization or selling of any items on site, are prohibited; • Any person found engaged in such activities shall face disciplinary action, and in severe cases dismissed; • All visitors/guests are to report at the site office on arrival, then undergo a brief safety induction, sign an indemnity form unless in possession of a correct PPE clothing to wear on site; • The induction briefing must communicate the safety rules and regulations to be adhered to by all persons entering the construction site. No person may remain on site without having first completed an induction training; • Trespassing on private neighbouring commercial properties is strictly forbidden; • No hunting of wildlife (game) is allowed, as well as trading and selling of items of any kind is allowed at the construction site. Employees found engaging in such activities will be disciplined or have their employment terminated; • The construction site must be secured so as to reduce the opportunity of criminal activities occurring including theft and or vandalism; • No drugs, alcohol, fire arms or dangerous weapons of any kind (pangas, machete, cutlass, butcher's knives, cutlass, traditional spears, etc.) are allowed on the construction. Only security personnel is allowed to carry fire arms; • Intoxication while on site is not allowed, and if deemed necessary, breathalysing may be instigated for all construction personnel.
11. Visual Intrusions and Sense of Place		
<p>Construction sites are often a hive of activities with movements of construction vehicles, machinery, equipment and overhead cranes. The site can therefore be a source of visual annoyance with scaffolding and cranes lifting construction materials often visible from a distance.</p>	<p>Nature - Negative</p> <p>Extent - Site Specific</p> <p>Duration - Temporary (during construction phase)</p> <p>Intensity - Very Low</p> <p>Probability - Probable</p> <p>Significance Rating</p> <p>Low Medium - WOM</p> <p>Low - WM</p>	<ul style="list-style-type: none"> • Position construction machinery and equipment and associated facilities in such a way that it is out of sight of human receptors using public roads – C19 and D854; • Employ techniques to suppress dust especially during strong east wind as well as smoke generation during the construction; • Where possible, use suitable screening during the construction to minimise visual impacts; • Specific activities that are prone to generating excessive dust should be suspended during high windy conditions or avoided altogether; • Direct security light at night inwards where it is required and where feasible make use of LED bulbs, and • Maintain a high standard of housekeeping with zero tolerance on littering and waste.
12. Heritage and Cultural Resources		

Summary of Impact	Impact Assessment	Proposed Mitigation Measures
<p>Items of cultural or heritage nature should always be expected to be unearthed in activities that involve some form of excavation and trenching.</p> <p>In the event of items of cultural or heritage nature are found 'the chance find procedure' must be followed as per the EMP</p>	<p>Nature - Negative</p> <p>Extent - Site Specific</p> <p>Duration - Temporary</p> <p>Intensity - Very Low</p> <p>Probability - Probable</p> <p>Significance Rating</p> <p>Low - WOM</p> <p>Very Low - WM</p>	<ul style="list-style-type: none"> Protect items of cultural and heritage nature if found during earth excavation works; Should any archaeological or cultural sites or objects be located during the construction of the proposed project, the measures proposed in the EMP should be followed; All construction site personnel must be briefed to immediately report any sites or objects which are located during the construction of the facility; In the event of finding what appears to be an archaeological site or a cultural and/or historic site or object, work should be terminated until a qualified archaeologist or historian can examine the item; and Comply with the measures provided in the EMP.
13. Socio-economic Environment		
<p>13.1 Investment in the local economy:</p> <p>The project CapEx is in the order of N\$20 million while the average OpEx for modern FROs is about N\$3.5 million per month.</p>	<p>Nature - Positive</p> <p>Extent - Medium</p> <p>Duration - Short term (construction work is temporary)</p> <p>Intensity - Medium</p> <p>Probability - Probable</p> <p>Significance Rating</p> <p>Low - WOM</p> <p>Low Medium - WM</p>	<ul style="list-style-type: none"> The investment is a major boost to the Daweb Constituency and Hardap Region. During the construction phase, the bulk of the funds invested in the project is spent in the local economy for the procurement of building materials (cement, building sand, building stones, etc.), and The national economy will also benefit from import duties, PAYE taxes and VAT paid to NamRa – the collector of state revenue.
<p>13.2 Support to Local Community</p> <p>Where applicable strive to source and to procure construction materials and services required for the project from the local and neighbouring communities</p>	<p>Nature - Positive</p> <p>Extent - Medium</p> <p>Duration - Short term</p> <p>Intensity - Medium</p> <p>Probability - Probable</p> <p>Significance Rating</p> <p>Low Medium - WOM</p> <p>Medium - WM</p>	<ul style="list-style-type: none"> Provide and offer building trade opportunities to local or SME companies from the neighbouring communities, e.g. trenching, plumbing, tiling, paving, bricklaying, joinery, etc.; Ensure that employment is offered in a transparent manner without discrimination on the basis of colour, race, tribe, religion, gender or political affiliation, and Employment of non-Namibians must be justified to the line ministry.

6.3 Operational Phase Impact Assessments

The operation phase will entail these activities:

- delivery of bulk fuel by road tankers;
- discharging into onsite USTs;
- refueling of patrons vehicles;
- day-to-day management of the facility (tank dipping, record keeping, cleaning, etc.)
- maintenance of the facility, etc.

Table 10: Operational Phase Impact Assessments

Impact Description (Summary)	Impact Assessment	Mitigation Measures
1. Contamination of Surface and Groundwater Sources		
<p>Contamination of stormwater may occur during the operational phase when vehicles are refuelled at the filling station. Spilled fuel, oil or other contaminants may be washed into the stormwater system unless mitigated.</p> <p>The underground fuel tanks that will be used for the storage of fuel products have the potential to leak and result in the spillage of fuel into groundwater sources. This is a potentially cumulative impact which can have far reaching negative impacts.</p>	<p>Nature - Negative</p> <p>Extent - Medium</p> <p>Duration - Short term</p> <p>Intensity - Low</p> <p>Probability - Probable</p> <p>Significance Rating</p> <p>Low Medium - WOM</p> <p>Low - WM</p>	<ul style="list-style-type: none"> Develop and implement a site specific spill contingency plan for the operation; Monitor fuel volumes in the USTs on a daily basis to detect unexplained losses due to leakages; Inspect the condition of the tanks, piping and pumping systems on a regular basis; Test tanks integrity at least 5 years after installation, with repetition on a 5-year cycle thereafter; Extract the tanks at the end of their lifespan and replace as governed by the supplier specifications; All waste oil, greases, fuels, chemicals, etc. should be collected and disposed of in an appropriate manner at a licensed offsite facility; The contents of grease traps and other waste oil, grease, etc. should not be emptied and dumped to the surrounding area; Clean water (e.g. surface runoff) and dirty water (e.g. contaminated water from the forecourt and filling points) must be separated to prevent contaminated run-off from entering stormwater, groundwater and soil;

Impact Description (Summary)	Impact Assessment	Mitigation Measures
		<ul style="list-style-type: none"> The forecourt area and the filling points have to be concreted and graded so that any effluent run-off will not enter the natural environment, but pass through an oil water separator sump/s before discharging into a collection ditch; The oil/water separator sump/s must be checked regularly and kept clean to prevent blockage and overflow. In addition, regular monitoring and clearing of oil/water separator sump/s will prevent hydrocarbon liquids from discharging onto sewer/stormwater system; and Waste from the separator must be disposed of at a suitable waste handling site where a Safe Disposal Certificate is issued.
2. Hazardous Waste Generation and Handling		
<p>Hazardous waste is likely to occur as a result of a large number of vehicles entering and exiting the FRO on a daily basis. The filling station management will have limited control as regards to vehicles entering the facility with oil or fuel leaks. Additionally, hazardous waste will be generated during the cleaning of oil separators and may occur as a result of split fuel or oil during refueling or servicing of vehicles.</p>	<p>Nature - Negative Extent - Site Specific Duration - Short term Intensity - Low Probability - Probable Significance Rating Low Medium - WOM Low - WM</p>	<ul style="list-style-type: none"> Paved surfacing coming in contact with vehicles must be bunded such that stormwater flows into an oil/water separator, to allow for treatment of hydrocarbons and other hazardous wastes; A designated vehicle wash bay must be put in place and must have an impermeable surface, with a drainage system directing wastewater to an appropriate classified waste site; Maintain silt traps, sumps and oil separators as part of the stormwater management system; Hazardous substances should be disposed of an appropriate classified waste site; Sludge from the oil separator must be disposed of to a suitable waste handling waste handling contractor or to an offsite licensed facility; All product spills within the bunded area must be effectively cleaned up; All contaminated spill material such as fibres soil, sandbags, etc. must be disposed of in appropriate hazardous waste landfill site; Ensure safe disposal of Methanol/water mixture used for removal of any residual water from the fuel tanks; Any split material must be disposed of in a suitable licensed waste disposal facility; Transport, handling and storage of hazardous and flammable substances must comply with all provisions of the Hazardous Substance Act and related regulations.
3. Solid Waste Generation and Handling		
<p>Once operational the FRO is expected to generate solid waste in the form litter primarily from the convenience store, take-away and minor solid waste from the fuelling activities. Unless well managed, solid waste has the potential to pollute the surrounding area including dry river streams as well as the onsite sewerage system.</p> <p>Solid waste can also be considered a cumulative impact as it will contribute to the overall waste produced within the rural district of Maltahohe if not managed well.</p>	<p>Nature - Negative Extent - Site Specific Duration - Short term Intensity - Low Probability - Probable Significance Rating Low Medium - WOM Low - WM</p>	<ul style="list-style-type: none"> A Waste Management Plan must be developed for the FRO and implemented by Management; Handle waste and waste management plan as per the EMP; Encourage and put waste recycling practice in place at the facility; Domestic waste must be stored in containers that are labelled or colour coded. The waste bins must be properly secured and covered to prevent scavengers from tipping them over; Vermin / weatherproof bins to be provided in sufficient numbers and capacity to store domestic waste. Solid waste shall be stored in a designated general waste storage area which is enclosed and impermeable; Adequate refuse collection must occur to ensure no build-up of refuse occurs at the filling service station. Waste may not cause any nuisance, e.g. odour; and No waste shall be buried or burned anywhere on the site.
4. Sewerage and Wastewater Generation		
<p>The new FRO will generate effluent and wastewater during its operational activities. Sewerage and wastewater has the potential to leak and contaminate the soils, stormwater and groundwater in the surrounding area.</p>	<p>Nature - Negative Extent - Small Duration - Temporary Intensity - Low Probability - Probable Significance Rating Low Medium - WOM Low - WM</p>	<ul style="list-style-type: none"> Wastewater and effluent management must be implemented at the FRO; Ablution facilities and associated piping system must be adequately lined and checked for leaks on a regular basis; All waste generated from the site must be discharged into the onsite sewage system onsite.
5. Air Pollution		

Impact Description (Summary)	Impact Assessment	Mitigation Measures
<p>Vapour emissions may result from exhaust fumes emitted by vehicles passing through the FRO, particularly from those vehicles that have not been serviced correctly. Vapour emissions are likely to be produced during the refueling when hydrocarbon vapours are displaced by the liquid petrol and diesel</p> <p>Point source emissions from the facility including SO₂; PM₁₀; NO₂ and CO may alter air quality</p> <p>Area source emissions including Volatile Organic Compounds (VOCs) from the whole site during operation may alter air quality and impact on surrounding properties.</p>	<p>Nature - Negative</p> <p>Extent - Small</p> <p>Duration - Short term</p> <p>Intensity - Low</p> <p>Probability - Probable</p> <p>Significance Rating</p> <p>Low - WOM</p> <p>Very Low - WM</p>	<ul style="list-style-type: none"> • Volatile Organic Compound (VOC) Vapour Recovery System, should be installed onto fuel dispensing nozzles at the refuelling and forecourt areas; • Operators must ensure that every effort is made to limit gaseous emissions; • All equipment used must manufactured to limit VOC vapour emissions; • Operational refuelling procedures must be put in place to limit vapour emissions during refuelling of vehicles and storage tanks; • Develop and maintain environmental management system for emission control; • Monitor gaseous emissions on a yearly basis measuring these parameters: <ul style="list-style-type: none"> o Particulate Matter (PM₁₀), o Sulphur dioxide (SO₂), o Nitrogen dioxide (NO₂), and o Carbon monoxide (CO)
6. Noise Pollution		
<p>The FRO is expected to be operated 24-hours each day. The movements of vehicles on adjacent roads – C19 and D854 are also expected to generate some noise. Overall the noise generated at the facility is expected to be negligible.</p>	<p>Nature - Negative</p> <p>Extent - Small</p> <p>Duration - Short term</p> <p>Intensity - Low</p> <p>Probability - Probable</p> <p>Significance Rating</p> <p>Low - WOM</p> <p>Very Low - WM</p>	<ul style="list-style-type: none"> • Establish noise level threshold consistent with WHO guidelines and comply accordingly; • The facility is located in a remote rural area of the country in which ambient noise levels are quite low and this should be maintained; • Equipment such as pumps to be used at the FRO must comply with the manufacture's specifications on acceptable noise levels; • Air conditioners at the FROs must be well maintained and regularly serviced to ensure minimal noise generation; • Workers must not produce any unnecessary noise, e.g. no loud music to be played, no whistles to be used, etc; • No hooting signs must be displayed to inform patrons not blow their horns.
7. Visual Intrusions		
<p>The proposed FRO is situated at the intersection of tourist road C19 and district road D854 and therefore visible to many travellers using such roads on a daily basis. The bulk of such road users are tourists.</p>	<p>Nature - Negative</p> <p>Extent - Small</p> <p>Duration - Medium</p> <p>Intensity - Low</p> <p>Probability - Probable</p> <p>Significance Rating</p> <p>Low Medium - WOM</p> <p>Low - WM</p>	<ul style="list-style-type: none"> • Buildings finishes of the FRO should be of appropriate design and quality and must be regularly maintained to prevent visual decay; • Buildings should also be designed in such a way that they fit into the surrounding natural environment of the location; • Waste must be removed from the filling service station and disposed of at an approved designated landfill site in order to avoid unnecessary litter being viewed as visual nuisance on site; • Lights at the FRO must be used for security purposes only and must point inwards and not outwards; • Maintain a high standard of housekeeping at the facility
8. Health and Safety Risks		
<p>During the operational phase – flammable liquids on site poses a potential fire and explosion risk throughout the lifespan of the proposed FRO. In addition to this, health and safety risks occur with regards to onsite vehicle movement, as well as cooking within the convenience shop and take-away outlet.</p>	<p>Nature - Negative</p> <p>Extent - Small</p> <p>Duration - Medium</p> <p>Intensity - Low</p> <p>Probability - Probable</p> <p>Significance Rating</p> <p>Low - WOM</p> <p>Very Low - WM</p>	<ul style="list-style-type: none"> • Management must develop a health and safety management plan for the FRO; • It is a specific requirement to comply with all health and safety standards as specified in the Labour Act and related Legislations; • Smoking should be prohibited in the vicinity of all flammable substances; • Adequate firewater tie-in points must be installed at the facility and functioning; • Adequate fire extinguishers must be installed and regularly checked for proper functioning; • All employees must be made aware of emergency /contingency plans and the procedure to be followed in the event of an emergency situation; • Records of all environmental and/or health and safety related incidents must be maintained and reported to the relevant authority; • All personnel working at FRO must be adequately trained in relevant health and safety aspects;

Impact Description (Summary)	Impact Assessment	Mitigation Measures
		<ul style="list-style-type: none"> A selected employees should be trained on First Aid. A trained First Aider must be present on site at all times. First Aid Kits that are adequately stocked must be available; A maintenance registry of all equipment whose malfunction can lead to injury or exposure to hazardous substances should be kept; Apply and adhere to all industry specific health and safety procedures and regulations applicable to the fuel sector.
9. Stormwater Runoff and Potential for Erosion		
While below average rainfall is generally received in the projects area, the development will consist of impervious surfaces (paved surfaces) and this will result in increased runoff and potentially increased erosion	<p>Nature - Negative</p> <p>Extent – Small</p> <p>Duration – Medium</p> <p>Intensity – Low</p> <p>Probability – Probable</p> <p>Significance Rating</p> <p>Low Medium - WOM</p> <p>Low - WM</p>	<ul style="list-style-type: none"> A site-specific stormwater management plan must be developed and implemented by Management aimed at handling any increased stormwater runoff that may occur from time to time; All stormwater runoff from hard paved areas on the site must be diverted into a stormwater treatment system or device capable of removing litter, sediment or oil products; The stormwater treatment system should include a high flow by-pass system to maintain the quality of the discharged water during periods of high rainfall or first rains; and At the first sign of erosion, the correct procedure must be undertaken to manage, resolve and prevent it from occurring.
10. Management of Resources		
Resource at the FRO should be managed and use therefore measured and managed.	<p>Nature - Negative</p> <p>Extent – Small</p> <p>Duration – Medium</p> <p>Intensity - Very Low</p> <p>Probability – Probable</p> <p>Significance Rating</p> <p>Medium - WOM</p> <p>Low - WM</p>	<p>The measures recommended are:</p> <ul style="list-style-type: none"> Electricity: <ul style="list-style-type: none"> Use electricity sparingly, Measure electricity consumption monthly, and Consider the use of alternative energy such as solar power or wind in order to reduce the carbon footprint of the facility. Water: <ul style="list-style-type: none"> Use electricity wisely; Enforce water saving strategies which include recycling and reuse; Measure water consumption and ensure that leaking taps are repaired. Sanitation: <ul style="list-style-type: none"> Monitor consumption; Guard against misuse; Maintain a high standard of housekeeping.
11. The Socio-economic Environments		
<p>11.1 Creation of Employment</p> <p>The FRO will help to combat unemployment as new job opportunities – both temporarily and permanent will be created during the operational phase.</p>	<p>Nature - Positive</p> <p>Extent – Medium</p> <p>Duration – Long term</p> <p>Intensity – Medium</p> <p>Probability – Highly Probable</p> <p>Significance Rating</p> <p>Medium - WOM</p> <p>Medium High - WM</p>	<ul style="list-style-type: none"> Offer employment opportunities in a transparent manner without discrimination on the basis of gender, religion, race, origin or political affiliation People from marginalized communities should also be considered for employment; Employing of non-Namibians must be justified to the line ministry.
<p>11.2 Working conditions</p> <p>Provide a safe and hazardous-free working environment.</p>	<p>Nature - Positive</p> <p>Extent – Medium</p> <p>Duration – Medium</p> <p>Intensity – Medium</p> <p>Probability – Highly Probable</p> <p>Significance Rating</p> <p>Low Medium - WOM</p> <p>Medium - WM</p>	<ul style="list-style-type: none"> Provide good working conditions to employees with clear defined roles and responsibilities. Provide adequate ablution facilities with clean drinking water and sanitation facilities (soap, toilets, etc) and suitable PPE.
<p>11.3 Transfer of skills and technology</p>	<p>Nature - Positive</p> <p>Extent – Small</p> <p>Duration – Medium</p>	<ul style="list-style-type: none"> Ensure that training opportunities are offered to all employees which ultimately benefits the business;

Impact Description (Summary)	Impact Assessment	Mitigation Measures
Provide opportunities for training and skills transfer	Intensity – Medium Probability – Probable <u>Significance Rating</u> Low Medium - WOM Medium - WM	<ul style="list-style-type: none"> New technologies are continuously being developed and implemented in the fuel retail subsector – employees should benefit from such technology through training
11.4 Communication Keep and maintain good communication with stakeholders	Nature - Positive Extent – Small Duration – Medium Intensity – Medium Probability – Probable <u>Significance Rating</u> Low - WOM Low Medium - WM	<ul style="list-style-type: none"> Ensure that a project Information Board is procured and installed where it is clearly visible to the general public, prior to starting with construction activities. Maintain good communication with stakeholders such that at all times.

6.4 Decommissioning Phase Impact Assessments

Considering the CapEx that will be invested, it is not projected for decommissioned to happen within the three years which is the validity period of an ECC. However, the management measures provided under the EMP for decommissioning are only provided in the event that the project ceases operation in a premature manner for factors beyond the control of the promotor.

If such a stage is reached, the proponent needs to remove all materials resulting from the demolition from the site. For this specific project, decommissioning will cover these aspects:

- Removal of USTs from the site
- Rehabilitation of the site to pre-construction conditions
- Landscaping by flattening the mounds of soil and planting indigenous trees;
- Dismantling of all equipment (pipes, pumps, electrical cables, etc)
- Removal of all dismantled equipment and disposing off in a responsible manner
- Fencing and signposting unsaved areas until natural stabilisation occurs
- Retrenching employees, etc.

Table 11: Decommissioning Phase Impact Assessments

Environmental Aspect (Summary)	Impact Assessment	Mitigation Measures
1. Communication		
Provide information on decommissioning to relevant statutory stakeholders	<u>Significance Rating</u> Low Medium - WOM Low - WM	<ul style="list-style-type: none"> Inform the relevant GRN Ministries and agencies (MIME, MEFT, Labour, NamRa, SSC, etc.) of the planned decommissioning; Inform affected employees and their trade union representative giving notices as provided for in the Labour Act; and Hire a reputable company to carry out the decommissioning.
2. Underground Fuel Storage Tanks		
Fuel vapour escaping into the atmosphere; Explosion Health issues Contamination of soils from residual fuel	<u>Significance Rating</u> Medium - WOM Low - WM	<ul style="list-style-type: none"> Ensure there is no spillage of any residual fuel during the emptying and removal of underground tanks. Pumps and associated equipment must be removed by qualified personnel to ensure their safety; Any fuel removed from the tanks and surrounding soil that maybe contaminated must be removed and disposed of at a licensed landfill site.
3. Noise and Air Pollution		
Dust released from breaking structures, walls, etc.	<u>Significance Rating</u> Low Medium - WOM Low - WM	<ul style="list-style-type: none"> Maintain plant and equipment well during the decommissioning phase; Demolition works to be carried out during daytime only; Provide workers working in noisy areas with suitable PPEs Spray dust areas, and Install dust trappers around the site;
4. Solid Waste		

Environmental Aspect (Summary)	Impact Assessment	Mitigation Measures
Solid waste can have significantly environmental and societal impacts, building debris, scrap metals, etc.	<u>Significance Rating</u> Low - WOM Very Low - WM	<ul style="list-style-type: none"> • Demolished debris should be stored in a secure place and disposed of in a responsible manner; • Demolished waste should be re-used or backfilled; • All waste generated should be collected by a waste collection company, and • Adequate waste receptacles with bulk storage facilities should be provided at convenient points to prevent possible littering during the dismantling process.
5. Occupational Health and Safety		
Exposure to harm; Exposure to chemicals; Fire risks; Incidences of accidents, injuries, long term health issues, etc.	<u>Significance Rating</u> Low - WOM Very Low - WM	<ul style="list-style-type: none"> • Provide suitable PPEs to employees; • Train the workers on personal safety and on how to handle equipment and machines; • Ensure that a well-stocked First Aid Kit is on site and maintained by a qualified personnel; • Report any accidents/incidents and treat and compensate any affected workers, and • Provide suitable sanitary conveniences which should be kept tidy and clean.
6. Socio-economic environments		
Closure can lead to layoff of employees, Financial hardships, Poverty, Emotional stress, etc.	<u>Significance Rating</u> Low - WOM Very Low - WM	<ul style="list-style-type: none"> • The safety of the workers should surpass all other objectives during the decommissioning process; • Adapt a project completion policy – identifying key issues to be considered; • Compensate the retrenched workers and assist them in seeking opportunities elsewhere

6.5 Summary of Impact Assessment

A summary of those impacts that have been assessed is presented in table 12.

Table 12: Summary of Impact Assessments

TABLE 5 : SUMMARY OF IMPACT ASSESSMENTS – CONSTRUCTION AND OPERATIONAL PHASES				
	POTENTIAL IMPACTS	NATURE OF IMPACT	IMPACT SIGNIFICANCE	
			Unmitigated	Mitigated
Construction	1. Impacts on Biodiversity	Negative	Medium (-ve)	Low
	2. Soil Compaction and Erosion	Negative	Medium	Low
	3. Surface and Groundwater Contamination	Negative	Low-Medium	Low
	4. Air Pollution	Negative	High	Medium to Low
	5. Noise Pollution	Negative	Low	Low to very Low
	6. Solid Waste Generation	Negative	Low	Very Low
	7. Traffic Impacts	Negative	Low	Very Low
	8. Health and Safety Risks	Negative	Low	Very Low
	9. Fire Risks	Negative	Low	Low
	10. Site Security Risks	Negative	Low	Very Low
	11. Visual Intrusion	Negative	Low	Low
	12. Heritage & Cultural Heritage	Negative	Medium	Very Low
	13. Socio-economic Impacts	Positive	Medium	Medium
13.1 Investments in the Local Economy	Positive	Medium	Medium	
13.2 Support to Local Economy	Positive	High	High	
Operational	1. Contamination of Surface and Groundwater	Negative	Medium	High
	2. Hazardous Waste Generation and Handling	Negative	Low	Very Low
	3. Solid Waste Generation and Handling	Negative	Low	Very Low
	4. Sewage and Wastewater Generation	Negative	Low	Very Low
	5. Air Pollution	Negative	Low	Very Low
	6. Noise Pollution	Negative	Low	Very Low
	7. Noise Intrusion	Negative	Low	Very Low
	8. Health and Safety Risks	Negative	Medium	Low
	9. Stormwater Runoff and Potential for Erosion	Negative	Low	Very Low
	10. Management of Resources	Negative	Medium	Low
	11. Socio-economic Environment	Positive	High	High
	11.1 Employment Creation	Positive	Medium	Low
	11.2 Working Conditions	Positive	Medium	High
	11.3 Transfer of Skills and Knowledge	Positive		
11.4 Communication	Positive			

For the construction phase fifteen (15) environmental aspects were identified and assessed. Out of the fifteen (15) environmental impacts assessed, twelve (12) have negative impacts with significance ratings ranging from **Medium to Low** without mitigation. Three (3) environmental aspects have positive impacts with a medium **Significance Rating** without mitigation. With mitigation the fifteen (15) environmental aspects have significance ratings ranging from **Low to Very Low**.

Construction activities would result in a localised increase in dust, noise levels and visual impacts. These impacts may be nuisance to guests visiting the adjacent Little Sossus Lodge and Camping Site but they will be a shorter duration. During the operation, some noise may be generated from general operational activities and air quality may be impacted by emissions released from vehicles refueling at FRO and those visits the Spar shop.

The nuisance impacts (air quality, noise and visual) during the construction and operation phases are expected to be of a **Very Low to Low** significant after mitigation for the construction and operation phases respectively.

During the construction the handling and storage of hazardous substances and the batching of concrete increases the potential occurrence of spillages, which could impact groundwater resources. During the operation, potential leakages from underground storage tanks may contaminate groundwater resources. With the implementation of appropriate mitigation measures, the impact on groundwater resources are deemed to be **Very Low** during the construction and operation phase.

The proposed FRO has the potential fire risk associated with fuel (flammable liquids) and electrical equipment used on site. A fire could impact on the health and safety of the employees as well as patrons of the FRO. With effective measures put in place, the significance of the impact is deemed **Low** after mitigation.

7. CONCLUSIONS AND RECOMMENDATION

The FRO combined with the medium-sized spat franchised shop that will be developed at the site will have positive impacts on the socio-economic environment (creation of employment, transfer of skills, boost to the district economy, etc.) and to the general physical environment (reduced traffic on gravel roads, reduced maintenance of gravel roads, reduced dust and gaseous emissions, etc.). Once developed and fully operational, the project as a whole will be vital to the local and regional economy with the potential to improve overall efficiencies in the tourism sector.

Provided mitigation measures recommended in the EMP are implemented and complied with, all potential negative impacts associated with the project can be effectively mitigated.

It is recommended that an ECC be granted to the promoter for the implementation of the project subject to the terms and conditions which the EC may wish to impose.

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